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ECHNOLOGY DEPT.

INSIDE DOPE

By GEORGE F. TAUBENECK

Story of the Week
Turnabout Is Fair Play
Straw in the Wind
Fighting the Last War
The New Weather Man
Seeing Storms
From War to Peace

Story of the Week

Up in rugged Duluth they like to tell a grand old story about Ole Oleson, a nearby farmer, who came to town on a Saturday to make several purchases. After buying his salt, bacon, and flour, he moved on to the liquor store.

"Vould like some bourbon, please," he told the clerk.

"Sorry, no bourbon. Just blends. Today you can have 'American Eagle' or 'Old Bullfrog.' "

"Ay take two bottles Bullfrog," answered Ole, after pondering this sad choice for a moment. "Ain't feel like flying tonight. Ay yust vant to yump a leetle."

Turnabout Is Fair Play

A story going the rounds of the Detroit Athletic Club today is a pretty cute commentary on Our Current Times.

Vice president of a leading automotive manufacturer, so the story goes, suddenly found that he was running out of white shirts. He sent his secretary out to buy some. She couldn't find any.

"Hmmm," he said to the secretary, when she returned empty handed. "The way to get things done is to go to the top. Write the president of the Blank Shirt Co., enclose my check for $60, and ask him to send me a dozen white shirts."

Shortly afterward he received a letter from the president of the Blank Shirt Co., advising him that said president was seeing to it that the dozen white shirts would be shipped. But there was a P.S. on that letter. It read:

"Enclosed is my check for $2,000. Please send me one of your new convertible coupes."

Straw in the Wind

Will the use of carbon dioxide gas replace gunpowder as a rifle propellant? A small manufacturer of chemical apparatus in Moline, Ill.—the Parr Instrument Co.—believes so. Its belief in this new method is so strong that it has acquired production rights, on a royalty basis, from Inventor Ray J. Monner of the Monner Gun Co., and his associate, Earl Paul.

The magazine of this remarkable new rifle, which is connected to a conventional gun barrel by a tube, holds the supply of dry ice. To fire 1,000 rounds of ammunition from a .22 calibre rifle requires only half a pound of dry ice. Shells for this gun consist of low-cost slugs with self-contained rifling rims (no brass casing to hold powder is needed).

A valve in the gas transmission tube is opened by the trigger, which allows the carbon dioxide gas to escape into the barrel and force out the bullet. The gas expands rapidly, causing the slug to reach its highest velocity at the gun's muzzle.

The carbon dioxide used for each shot from the gun is immediately replaced by another charge which evaporates from the supply of dry ice in the magazine.

The gun is kept cool enough for continuous rapid fire, because the gas leaves the magazine at an extremely low temperature. Bullets passing through the bore produce terrific friction, and that instigates enough heat to counter-balance the cold. Thus, the barrels—not subjected to corroding hot gases—have exceptionally long life.

(Concluded on Page 6, Column 3)

OPA Augments Decontrol on 'Commercial'

WASHINGTON, D. C. — Listing specifically what items of air conditioning and commercial refrigeration equipment have been dropped from price control, Amendment 56 to SO 129 was scheduled to be issued by OPA on Oct. 4.

This new amendment is intended to clarify any doubts as to just what items were covered in Amendment 37 to this order which OPA issued on July 26, the agency stated.

Twelve classifications are included as follows:

"1. Air conditioning units, self-contained, over 1 hp. or 12,000 B.t.u., and up to, but not including, 25 hp."

(Portable air conditioners under 1 hp. were decontroled Sept. 11.)

"2. Beverage cooling-and-dispensing equipment, including accessories.

"3. Coils, high and low side, con-

(Concluded on Back Page, Column 2)

8 More Firms Sign Up For Show; Total 194

CLEVELAND—Eight more exhibitors have taken booth space at the All-Industry Show to be held in the Public Auditorium here Oct. 29 to Nov. 1, bringing the total up to 194, announces R. Kennedy Hanson, director of the exposition.

They are U. S. Thermo Control, Minneapolis (Booth No. 917); C. Schmidt Co., Cincinnati (Booth No. 1217-B); Morton Salt Co., Chicago (Booth No. 1219-B); Fruehauf Trailer Co., Detroit (Booth No. 1117); American Mfg. Co., Inc., Montgomery, Ala. (Booths No. 1211 and 1213; Monarch Store Fixture Co., Cleveland (Booth No. 1114); Hudson Products Co., Inc., Detroit (Booth No. 1217-A); and the Southern Refrigeration Journal, Memphis, Tenn. (Booth No. 1217).

Pittsburgh Power Strike May Hit Cold Storages

PITTSBURGH, Oct. 3—Future of refrigerated supplies, threatened here by a strike of electric power workers, remained uncertain even as government conciliators arrived to hold strike factions in continuous session.

City's cold storage warehouses, according to superintendent Howard S. Patton, Bureau of Inspection, held $21,000,000 of foods. Electric power was limited.

At North Pole Cold Storage & Ice Co., manager J. E. Davis reported four days complete power shutoff wouldn't damage food because rooms, insulation, temperature, and food were in good shape. Warehouse held 50% frozen foods. Remainder was poultry, canned meats, liquid and shell eggs, cheese.

Only bad feature—with no street car service—was getting manpower, it being physically impossible to drive

(Concluded on Page 4, Column 2)

Carl Olin Will Shift Headquarters to Coast

EVANSVILLE, Ind.—Carl J. Olin, western manager for the Electric Refrigeration Division of Servel, Inc., and a native of Los Angeles, will transfer his headquarters to the western metropolis Nov. 1, announces Geo. S. Jones, Jr., Servel vice president in charge of sales.

Mr. Olin, who has been making his headquarters in Evansville, will be in charge of sales activities in all states west of the Rockies. Present district managers will serve customers in the

(Concluded on Page 4, Column 3)

New Records Made In August for All But Refrigerators

WASHINGTON, D. C.—New records in the production of major appliances, except for household refrigerators, were chalked up during August, but John D. Small, administrator of CPA, believes that industry is rapidly nearing its maximum output. Compared to the monthly rate of 1940-41 August totals were as follows:

	August	1940-41
Refrigerators	218,000	309,000
Washers	212,000	158,000
Electric ranges	66,000	47,000
Gas ranges	169,000	125,000
Water heaters	267,000	175,000
Vacuum cleaners	218,000	156,000
Electric irons	608,000	380,000
Radios	1,700,000	1,100,000

There will be continuing gains in appliance output for the balance of the year, but the increases won't be at all spectacular, warns Mr. Small, who declares that more production is dependent on greater labor productivity, improved machinery, or persuading more women to return to factories.

Fractional horsepower motor production jumped sharply in August to 1,800,000, a gain of a million over July. Unfilled orders also gained, however, totaling 36,000,000. This is 3,200,000 more than on July 1. At current rates, this backlog represents 21 months' output. If materials were available, says CPA, motor production could hit nearly 2,500,000 a month.

Shanklin Heads All Sales for Carrier

SYRACUSE, N. Y. — Appointment of Arthur P. Shanklin as vice president and general sales manager of Carrier Corp. is announced by Edward T. Murphy, senior vice president.

Effective Nov. 1, 1946 Mr. Shanklin will be in charge of all of Carrier's domestic sales activities.

A vice president of Carrier Corp. since 1941, Mr. Shanklin has been associated with the company since his graduation from the University of Kentcky in 1922. During this period he has served in many sales and executive capacities and at present is vice president in charge of dealer sales.

B. R. Davidson Resigns Post with Hussmann

ST. LOUIS—B. R. Davidson has resigned as manager of the refrigeration division of Hussmann Refrigeration, Inc., here, the company announces.

No successor has been appointed, and Mr. Davidson has not revealed his plans for the future.

Outlook on Materials Befogged As New Tie-ups Loom In Supply

Shortages of Livestock, Textiles May Affect Refrigeration Production, Manufacturers Fear

By Phil B. Redeker

NEW YORK CITY—The struggle for materials to make things—particularly refrigeration equipment and appliances—is now at its zenith, and whether the situation will get worse or better, or level off at its present status, no one seems qualified to say.

Right at this moment the "old" shortages seem to be as bad or worse, and new ones come to the fore almost every day.

For example, few people would link up the fact that cattle aren't going to slaughterhouses with any shortages of materials for refrigerators. Yet, manufacturers of refrigerators expect a pinch in lacquer finishes for their products because glycerin, which is made from animal fat, seems certain to be short if livestock is not slaughtered.

The textile field seems remote from electrical appliances, yet textile products are vital to wiring and other electrical necessities, and the needed textiles are woefully short.

The situation on castings is near the panic stage, and the purchasing agent for a large appliance manufacturer says the overall U. S. demand for copper is at least 100,000 tons a month with the supply running at 65,000 tons. This firm's production of electric motors is running 140% of prewar, but demand is 240% of prewar.

Most manufacturers today are keeping going on a "barter" basis. They get or produce some basic material or component and swap it with another firm which makes something they need. The president of one of the world's largest corporations devotes nearly all of his time to procurement of materials, mostly on a "horse-trading" basis, making 50 to 60 long distance phone calls daily.

What's the answer? Most manufacturers say bluntly that artificial controls over production, distribution, and pricing of basic materials contribute greatly to the shortages. Such controls, they say, encourage waste, hoarding, black market operations, and a tendency to produce only high cost items, no matter how unessential they may be to the overall economy.

End of Price Controls In 6 Months Hinted

WASHINGTON, D. C.—"If things keep moving during the next six months at the same rate they have traveled in the past six months, price control and all its irritations and problems will be a long way toward bowing out of the picture."

Chairman Roy L. Thompson of the Price Decontrol Board expressed that belief recently at the annual meeting of state officials of the American Retail Federation.

Mr. Thompson pointed to soaring production figures showing refrigerators up 145% since March, washing machines up 81%, electric ranges up 312%, electric irons 91%, radios 70%, and vacuum cleaners 45%.

"How long," he asked, "do you think this gigantic production has to keep up before the need for price control will be swept overboard by a wave of production? Not long, I think."

Baker Ice Appoints 3 To Executive Positions

OMAHA—In line with the national expansion program of the Baker Ice Machine Co., Inc., President Ross Rathbun has made three appointments to "augment the Baker staff at the managerial level."

The new appointees are:

A. L. Atherton, formerly a refrigeration and air conditioning engineer with Westinghouse, now Baker manager of manufacturing.

Charles Knox, promoted from chief engineer to plant manager in charge of Baker's Omaha plant operation.

John H. Stewart, formerly assistant production manager, now promoted to purchasing agent.

As manager of manufacturing, Mr. Atherton will have full charge of design and manufacture of all machines and equipment produced in Baker's

(Concluded on Page 4, Column 5)

CPA Doubts Priorities Will Aid Steel Users

WASHINGTON, D. C. — As the steel priorities system went back into effect on Oct. 1, CPA officials are reportedly admitting they are doubtful whether the setup will help manufacturers very much.

Under Priorities Regulation 28 civilian steel users may seek a "CC" rating to break bottleneck situations or they may apply under a hardship provision which is supposed to give them enough iron or steel to bring their operations up to break-even level if they can show they're losing money for lack of raw materials.

CPA's steel division, however, is said to be swamped with applications from small manufacturers who say they need steel if they are to operate profitably.

Meanwhile California Congressmen are beseiging agency heads in Washington on behalf of west coast manufacturers who say that steel producers are diverting sheet steel to the east and middle west.

Officials of the National Housing Authority, annoyed by charges that their program for veterans housing is siphoning off steel to the detriment of other industries, reportedly claim that the housing program will take less than one-half of 1% of total expected production, 20% of galvanized sheet supplies, and less than 6% of steel sheet and strip, the types used by refrigerator and automobile manufacturers.

Growth of Southern Industry Offers Big Conditioning Market, ACRMA Told

HOT SPRINGS, Va.—The growing importance of the South as an industrial area, made possible to a large degree by air conditioning and refrigeration, indicates a rapidly expanding market for this industry, directors of the Air Conditioning & Refrigerating Machinery Association were told at a meeting here Sept. 25-27 by William B. Henderson, A.C.R.M.A. executive vice president.

Another important market for refrigeration and air conditioning lies in schools, particularly in the South, he pointed out.

"One of the most significant trends in manufacturing in progress at this time is the industrialization of the South," he said. "This trend gained impetus during the early years of the war and has continued with such rapidity that it commands increasing attention in our concept of industrial America.

"The progress of the South is important to all business, but doubly so to the air conditioning and refrigerating industry which has played such a large part in making northern manufacturing and processing techniques adaptable to the southern climate. . . .

"With the introduction of industrial air conditioning, heat can be controlled just as readily as cold. This is one of the most significant developments for the South in its economic history, probably equalling or exceeding in its importance the

(Concluded on Page 17, Column 1)

EQUIPMENT FOR SALE

Handle the famous Penachio Refrigerator and refrigeration lines as well as the famous Pinocchio-Crsco Mello-ized frozen food freezers. Capacity 8 to 40 cu. ft., glass tops and lock and hinges.

Reach-In Coolers and freezers in 16, 20, 30, and 45 cubic foot, all stainless steel interior and exterior.

Any size Walk-In Cooler and Freezer.

Beverage Coolers in 5, 6, 8 ft.

Meat and Delicatessen Cases 4, 6, 8, 10, 12 ft. Dairy and Vegetable Stainless Steel Boxes in 6, 7, 8, 10, 12 ft.

Bakery Dough Retarders.

Large and medium size Meat Saws.

Blowers, Case Coils and Ice Cube Makers.

Self Service Open Freezer with Wall and Center Canopy.

Soda Fountains, Bob Tails, Sandwich Units & Steam Tables.

Over 100 models to pick from. Immediate delivery out of stock. Write or call, if in New York stop in to see us. Well represented!

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Benoit Named to G-E Eastern Mfr. Sales Office

BLOOMFIELD, N. J.—Walter F. Benoit has been named eastern manager of Sales to Manufacturers for the General Electric Co.'s Air Conditioning Department, according to W. F. Karsten, sales manager for Industrial, Marine, and Contractor Equipment. Mr. Benoit will make his headquarters here.

Mr. Benoit joined G-E in January of this year with a background of wide experience in the refrigeration and air conditioning industry. Prior to his present appointment, Mr. Benoit was attached to the New York City office of the air conditioning department where he contacted distributors and manufacturers.

N.Y. Banks Add Appliance Displays to Windows

ROCHESTER, N. Y.—A number of banks here which have devoted considerable advertising space to promoting the sale of major appliances through time payment setups have now added window displays in cooperation with various appliance dealers.

Bank credit departments situated in what were once retail stores have put display windows back into use with full displays of the kinds of appliances available under time-purchase financed systems. These include washers, refrigerators, cleaners, radios, and others.

Dealers donating appliances are given full credit with window cards.

Manufacturers Release More Freezer Prices

Editor's Note: The first complete list of home freezer prices for all manufacturers was published in last week's issue of AIR CONDITIONING & REFRIGERATION NEWS. The list was double-checked with OPA and manufacturers, but some reports from companies were received too late for last week's issue.

Firestone Tire & Rubber Co., Akron, Ohio, lists the following as its prices for three models of freezers:

Model	Price to Dealers	Price to Consumers
5-A-4—		
6 cu. ft. upright	$245	$329.95
5-A-5—		
10½ cu. ft. farm model	430	529.95
5-A-15—		
6 cu. ft. chest type	253	315.00

Model 5-A-4, says Firestone, is selling below the OPA-approved ceilings, which permit a price of $261 to the dealer and $336 for the consumer.

Barry Electric Co., Bethel, Conn. is not manufacturing freezers, although the firm did apply for prices to OPA, according to J. Barry, who says, with respect to the OPA ceilings, "under their prices we could not operate."

Portable Elevator Mfg. Co. of Bloomington, Ill., says that its Model 60 chest type 6-cu. ft. home freezer is powered by a ⅛-hp. hermetically sealed condensing unit rather than a ⅕-hp. unit as was listed in last week's NEWS.

Beall Pipe & Tank Corp. of Portland, Ore., reports that it is not in production on the four models of home freezers listed in the Sept. 30 issue, but is confining its output to a 46-cu. ft. upright walk-in freezer and a 160-cu. ft. walk-in. Both models are equipped with freezing plates, and are powered by ½-hp. condensing units.

Model 160-W retails for $1,395; model 46-U for $850. Discount to distributors is 40%; to dealers, 30%.

Retail Ceiling Price Assigned On Frostmaster Home Freezer

NEW YORK CITY—Retail ceiling price of $129.50 f.o.b. Nashville, Tenn., has been established for the Frostmaster home freezer manufactured by Crosley Corp. and distributed exclusively by Frozen Food Products, Inc., here. West of the Rockies the price is $3 higher.

Carrier Corp.'s Factory Roll Exceeds Even Wartime Peak

SYRACUSE, N. Y.—With 2,239 hourly employes, Carrier Corp. now has the largest factory payroll in its history, surpassing peaks reached in the height of the wartime production program.

Carrier says, however, that it needs many additional employes in its Syracuse plant to meet the national and international demands for air conditioning and refrigeration products.

In addition to the hourly payroll, home office and field employes bring the total Carrier employment figures above 4,200.

More than 1,300 returned veterans are included in the rising employment total.

Moving to Coast

CARL J. OLIN

As Western manager for the Electric Refrigeration division of Servel, Inc., Mr. Olin will transfer his headquarters from Evansville, Ind. to Los Angeles.

Frozen Food Retailers Form Group In New York

NEW YORK CITY—A trade association of operators of retail frozen food stores in the metropolitan area has been organized with the chartering of Frozen Foods Retailers Association, Inc., 11 West 42nd St., New York.

Morton Zuckerman, of the law firm of Dunn & Zuckerman, attorney for the corporation, said that at present the group is composed entirely of operators of specialty frozen foods outlets. No independent grocers have sought membership as yet, he stated.

The association will disseminate to its members information on the entire frozen food industry, as well as performing such services as borrowing money, executing notes and checks, and opening bank accounts for corporate purposes. Present plans also include the sponsorship of a consumer education program on the preparation, nutritional values, and other advantages of frozen foods, Mr. Zuckerman said.

While membership is now confined to the metropolitan New York area, the association eventually hopes to extend its activities and its membership throughout the country.

Directors named in the incorporation papers are Frank Steuer, New York City; Sidney Jasavana, Stamford, Conn.; H. Irving Gorsen, East Orange, N. J.; Paul F. Hartman, Little Neck, L. I., N. Y.; Fred L. Westgate, Sunnyside, N. Y.; and Frederick Annucci, Mamaroneck, N. Y.

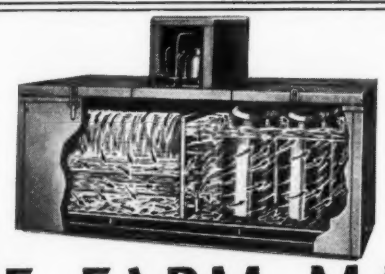
Some Heat Transfer Equipment, Cooling Towers Decontrolled

WASHINGTON, D. C.—Metal cooling towers and heat exchanger equipment subject to RMPR 136 of the shell and tube type with a heat transfer area in excess of 50 sq. ft. have been dropped from price control. This move was made by OPA in Amendment 55 to SO 129.

WILSON SELF-CONTAINED AUTOMATIC HIGH WATER LEVEL ZERO-FLOW

STOPS MILK SPOILAGE

COOLS THE DANGER ZONE FAST



Wilson ZERO-FLOW MODEL ZF8 HX50

Packaged-Unit Milk Cooler
Sizes from 4- to 24-can capacity

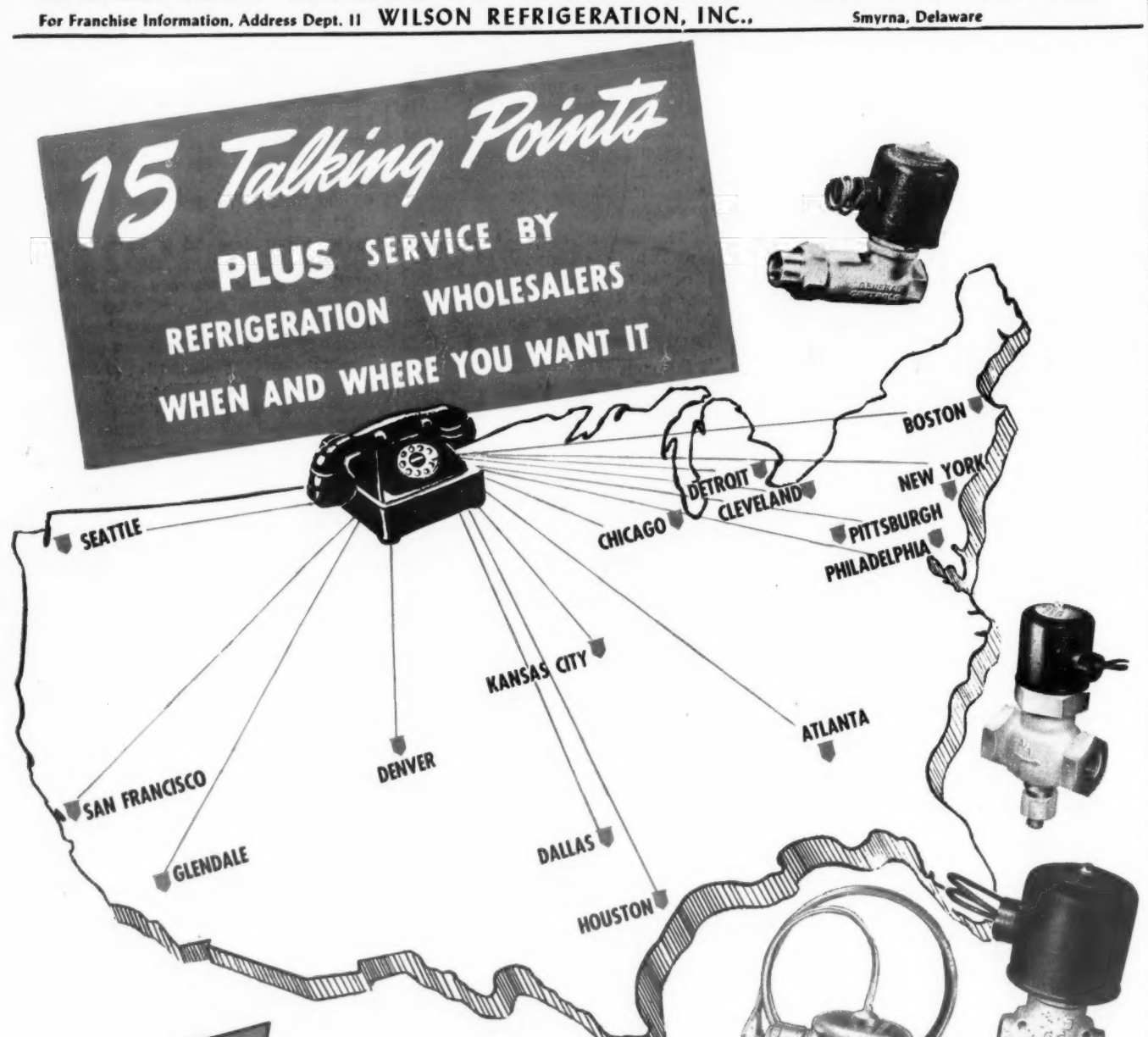
TO CAPTURE AND HOLD THE FARM MARKET

Specify Genuine "Refrigeration by Wilson"

• FARM MILK COOLERS • FARM FREEZERS • FARM REACH-IN REFRIGERATORS • FARM WALK-IN REFRIGERATORS

For Franchise Information, Address Dept. 11 WILSON REFRIGERATION, INC., Smyrna, Delaware

15 Talking Points PLUS SERVICE BY REFRIGERATION WHOLESALERS WHEN AND WHERE YOU WANT IT



GENERAL CONTROLS' Factory Branches and Refrigeration Wholesalers are located in principal cities. Their adequate facilities, the experience and skilled counsel of their personnel are as conveniently near to you as your telephone.

Of equal importance—when you are considering automatic temperature, pressure and flow controls—is that General Controls are *good* products, engineered right, built right, proved by performance.

There are talking points about General Controls' engineering and field service that should benefit you . . . as they are benefiting others in your line of business. A wire, letter or telephone call (see yellow classified section of principal city telephone directories) will bring a qualified Controls Engineer to your office.

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FOR COMPLETE Specifications request new Catalog 52-C.

33-1

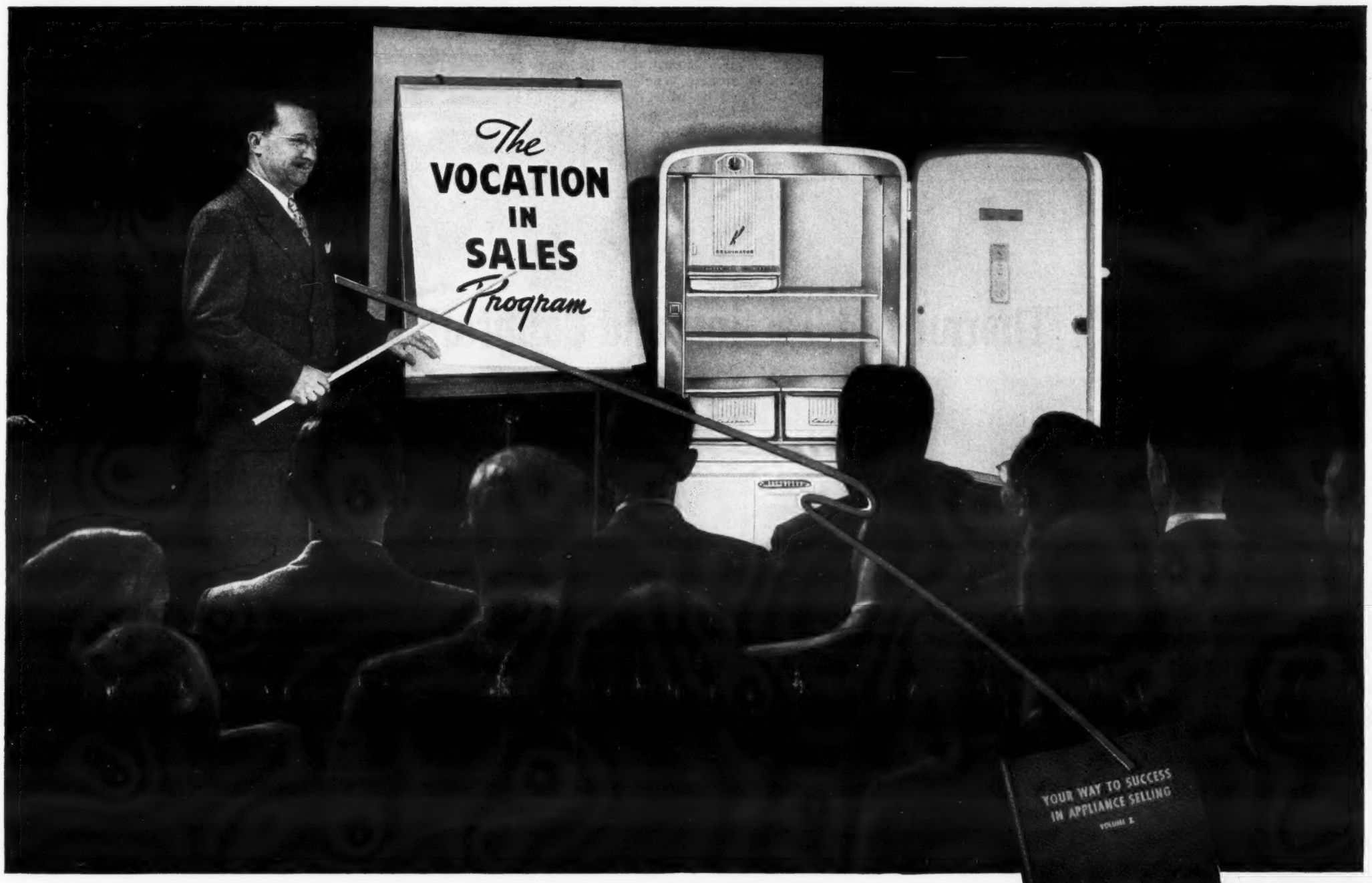
See General Controls' extensive display at Booth 1122, "All Industry Refrigeration and Air Conditioning Exposition," Oct. 29 thru Nov. 1, 1946, at Cleveland.

See the new COOLSTREAM ELECTRIC WATER COOLERS

at the Exposition
Booth 303
Cleveland Auditorium

THE COOLSTREAM CORPORATION
240 BUTLER STREET · BROOKLYN 17, N. Y.

Retail-mindedness begins right here . . .


The VOCATION IN SALES Program
YOUR WAY TO SUCCESS IN APPLIANCE SELLING
VOLUME 2
YOUR WAY TO SUCCESS IN APPLIANCE SELLING

. . . retail-mindedness begins with this group of Kelvinator *Training* Managers who have received a thorough schooling in Kelvinator's great Vocation-In-Sales Program.

Each of these men is not only familiar with every phase of the program . . . its objectives, its methods, its materials and the products to be sold . . . but has been carefully chosen for his ability to put it into action on the sales front.

Thus, they, with Kelvinator district managers, share the responsibility of making this great activity effective in the field.

V.I.S. offers each Kelvinator dealer assistance in attracting and selecting salesmen, in necessary sales and product training, as well as help in planning and building a sound retail operation—*at the time he needs it*—through a continuing program of development.

In its continuing nature and strict attention to every detail of retail selling and sales management, Kelvinator's V.I.S. Program differs radically from usual activities of this type. And it is completely practical, because it comes directly from the years of retail sales experience represented at Kelvinator's famed Retail Sales Management Forum . . . the experiences of leading appliance retailers, department store, furniture store and utility executives, as well as Kelvinator sales executives.

Here again Kelvinator brings to its retail organization yet another benefit of the retail-minded approach . . . a benefit that is inherent in the Kelvinator franchise.

The most Valuable Franchise in the Appliance Industry

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION

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ATTENTION MANUFACTURERS!
We specialize as sole distributors in freezers and refrigeration. Wonderful coverage in the Eastern Seaboard States from Maine to Florida. Our dealers are well established, our lines are complete. We deliver by trailer, no sales help needed. Field representation and service guaranteed on your products. Inquire about our export department. We have branches in Greenwich, Connecticut; Poughkeepsie, New York; Mt. Vernon, New York; Philadelphia, Pennsylvania; Miami, Florida and New York City. If you are looking for real representation in this area, write to
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BRANCHES IN PRINCIPAL CITIES
MAIN OFFICE
440 LAFAYETTE ST.
New York 3, N. Y.
PURO FILTER CORP. OF AMERICA
DRINKING WATER SPECIALISTS FOR 40 YEARS.

Pittsburgh Strike--

(Concluded from Page 1, Column 2)

around and pick up maintenance employes. Nearest available freezers outside of Pittsburgh's two affected counties were in Cleveland.

Ice plants with barely enough for hospitals and perishable freight were threatened seriously. Practically all ice in the city was used up.

At Federal Cold Storage with its plant having "envelope construction" (two concrete buildings, one inside the other, with 14 in. of cork between buildings), was stored 30,000,000 lbs. of food valued at $2,000,000. Manager A. R. Purrent was receiving only refrigerated food; barring all having "field heat."

City Ice & Fuel, unable to produce, was using ice in storage. Ice for hospitals could be shipped into Pittsburgh, it was reported, but the freight would be terrific.

Threatened—because Army generators on order hadn't arrived—with $5,000 loss per hospital during the last power strike, city hospitals now are in good shape with 60 kilowatt generators, it is said.

Olin to Move--

(Concluded from Page 1, Column 2)

midwest and southwest under the supervision of W. J. Aulsebrook, sales manager, it was announced.

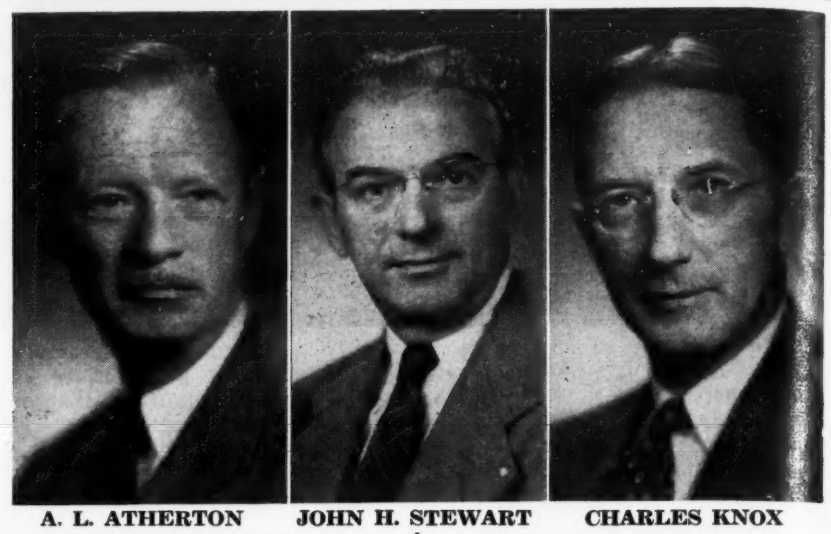
Covering the west coast territory, Mr. Olin started with Servel as a field service engineer. He was transferred to Evansville in 1928 as assistant service manager. Since then he has been successively service manager, applications manager, national accounts manager, assistant sales manager, becoming western manager about a year ago.

H. Ehrlich & M & V Supply Elected R.E.W.A. Members

CINCINNATI — Two refrigeration parts wholesale firms have been elected to membership in the Refrigeration Equipment Wholesalers Association by the board of directors.

The new members are:

H. Ehrlich & Sons Mfg. Co., Inc., of St. Louis, and M & V Supply Co. of Oklahoma City.



A. L. ATHERTON JOHN H. STEWART CHARLES KNOX

* * *

CPA Likely to Continue In Operation Next Year

WASHINGTON, D. C. — Civilian Production Administration must stay in business after Dec. 31 and continue to exercise priority controls over building materials, John N. Steelman, reconversion director, has ruled.

Baker Promotions--

(Concluded from Page 1, Column 4)

manufacturing plants here, and at Seattle, Los Angeles, and Portland, Maine.

Mr. Atherton, who was graduated from Worcester Polytechnic Institute at Worcester, Mass. in 1911, has 35 years experience in design and engineering as well as precision manufacture.

Mr. Knox, a veteran of 36 years service with Baker, had held the position of chief engineer since 1916. Before joining the company, he had attended the Polytechnic Institute at Darmstadt, Germany, and received his degree in mechanical engineering at the Polytechnic Institute of Friedberg in Hesse.

Mr. Stewart, a Baker employee for 25 years, succeeds Paul Crossman, who resigned to become instructor in business administration at the University of Omaha.

Zoppel Heads N.A.R.C. Trade Relations Group

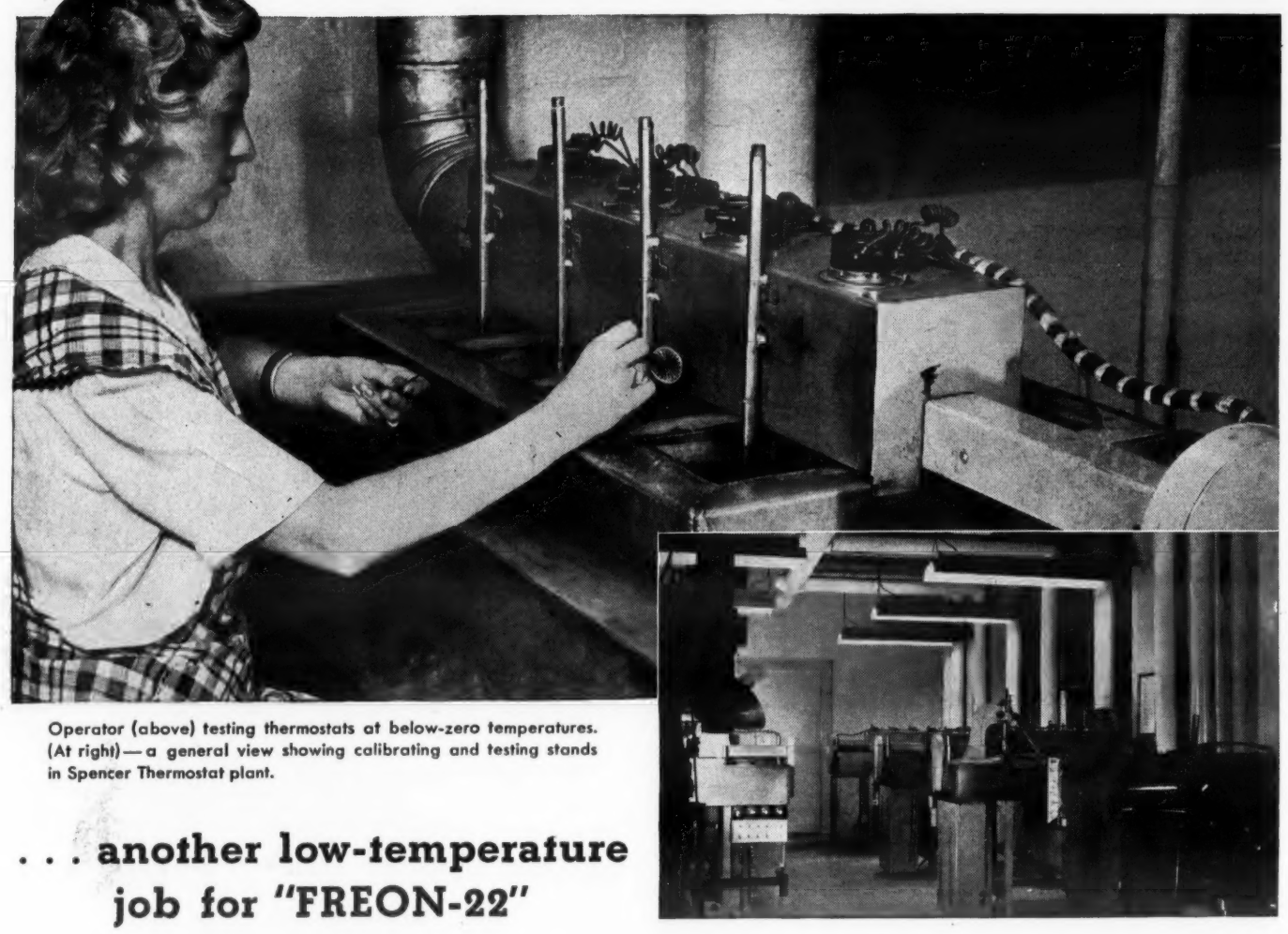
CLEVELAND—F. J. Zoppel, president of the Columbus Refrigeration Co., Columbus, Ohio, has been appointed chairman of the Trade Relations Committee of the National Association of Refrigeration Contractors, whose headquarters are here.

Mr. Zoppel is also president of the Central Ohio Association of Refrigeration Contractors.

Serving with him on his committee are W. W. Allison, operating under his own name in Los Angeles, and president of the California Association of Refrigeration Service Engineers; Charles H. Merrill, of Holbrook Merrill Co., San Francisco; Raymond M. Shock, executive-secretary of the Refrigeration Contractors Association of Detroit; and Theodore A. Reina, president of the Refrigeration and Air Conditioning Guild of New York City and vicinity.

The committee's principal function is to cooperate with other groups in the refrigeration industry to assure and maintain fair and sound business practices, N.A.R.C. said.

Thermostat Testing and Calibration



Operator (above) testing thermostats at below-zero temperatures. (At right)—a general view showing calibrating and testing stands in Spencer Thermostat plant.

. . . another low-temperature job for "FREON-22"

MANY of the thermostats made by the Spencer Thermostat Company, Attleboro, Mass., are designed to operate at sub-zero temperatures. These thermostats are used to control heaters, prevent equipment from freezing, prevent oil from congealing, open drain valves . . . have many other uses on refrigerating equipment, particularly in the frozen foods field.

"Freon-22" is used to cool the brine which circulates through the work-stands where the thermostats are calibrated and tested. The cooling system consists of two Carrier 7½-h. p. compressors, an evaporative condenser, and a 8⅝" x 7' long Acme brine cooler. It chills 33 gallons of alcohol brine per minute to whatever temperature down to –30°F. is required.

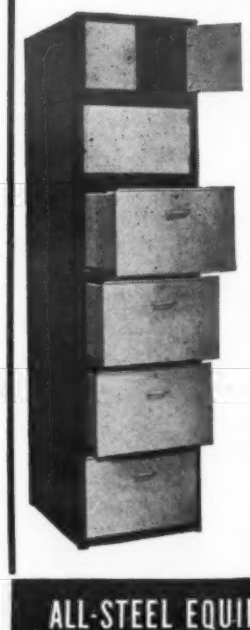
"Freon-22" is the ideal refrigerant for low-temperature commercial and industrial uses. It provides temperatures from 0°F. to –150°F. with less work, lighter and more compact equipment—savings in power and space.

All "Freon" refrigerants are safe—non-toxic, non-flammable. Their non-corrosive qualities mean longer life and less maintenance for equipment. There's a "Freon" safe refrigerant for every job. Let our Engineering Dept. give you the details. Write Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington 98, Delaware.

IMPORTANT FEATURES OF "FREON" SAFE REFRIGERANTS
1. Freedom from moisture . . . less than 25 parts per million.
2. Narrow boiling point range—confined within limits of 1/2°C.
3. Less than 2% of insoluble gases in vapor phase.
4. Freedom from acids. There are none in "Freon."
5. Freedom from impurities . . . less than 1/20 of 1%.

KINETIC
FREON
REG. U. S. PAT. OFF.
safe refrigerants
"FREON" IS KINETIC'S REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLENTS

A-S-E FROZ-N-FOOD LOCKERS
THE LOCKER LINE THAT SELLS



New and added profits are provided for you with A-S-E Froz-n-Food Lockers. For A-S-E's the profit line of lockers. Note their features, such as: glide-easy drawer action, smooth two-tone finish; drawer units are factory assembled, steel construction—these and other features make A-S-E Froz-n-Food Lockers easy to sell.

A-S-E is America's preferred locker. The locker for extra profits, complete customer satisfaction. Write today for more information.

ALL-STEEL EQUIPMENT, INC.
450 GRIFFITH AVENUE AURORA, ILL.

Frigidaire operates world's largest porcelain finishing plant for appliances!

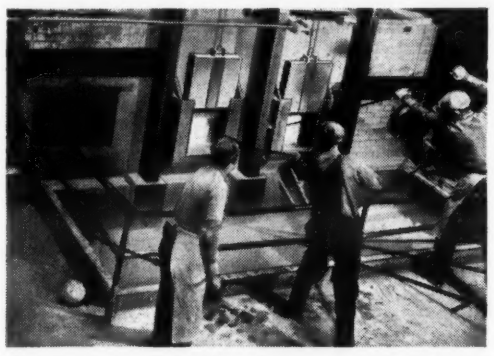
FRIGIDAIRE was first to apply a porcelain finish successfully to household refrigerators, nearly a quarter-century ago. Since then, the finishing process and the porcelain itself have been steadily improved until the porcelain on Frigidaire appliances of today is world famous. Time, heat, water, paint, fire, scuffing—none of these will harm Frigidaire Lifetime Porcelain.

Yet Frigidaire Lifetime Porcelain, while being the finest obtainable, is not a high-premium product!

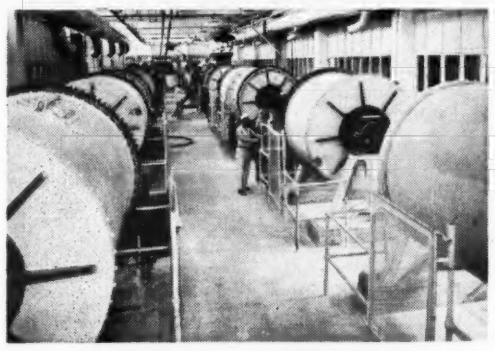
By modern methods of production; by continued improvement; by steady increases in economy of manufacture, Frigidaire has put this finest of all appliance finishes within reach of millions of home owners. And Frigidaire has probably produced more porcelain-finished refrigerators than all other manufacturers combined!

This has meant added enjoyment and satisfaction to purchasers; a higher unit of sale and increased profits to Frigidaire dealers.

Here, then, is another example of Frigidaire leadership. Another reason why the Frigidaire franchise is more eagerly sought and more jealously guarded than any other in the industry. Another instance where the Frigidaire dealer and his customers can . . . *Depend On Frigidaire To Do Things Right!*



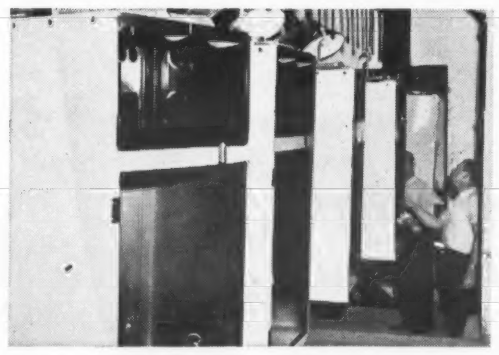
1. To produce Frigidaire porcelain, a "frit" is made of raw materials which are melted to liquid resembling molten glass.



2. After quick cooling, the "frit" goes to mills, where vitreous balls grind it to powder. This "raw porcelain" is then ready to be applied.

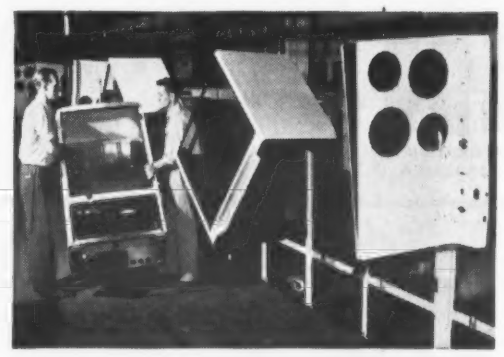
3. To insure the whiteness for which it is famous, Frigidaire porcelain must be applied to clean metal surfaces. Here is one cleansing treatment.

4. Applying the blue ground coat. Typical of Frigidaire-developed safety measures, men wear masks; are furnished with fresh filtered air.

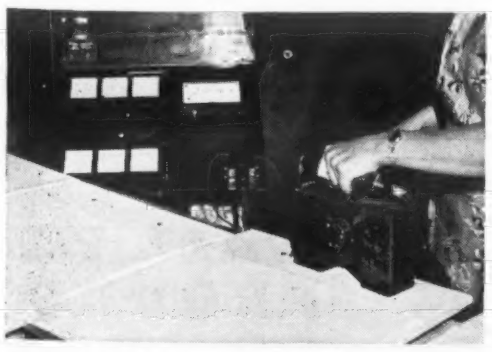


5. After the ground coat has been baked on and cooled, final porcelain coat is applied. Here refrigerator shells from the oven are inspected.

6. Inspection of every part and process is a continuing procedure. Here one-piece refrigerator cabinets are checked for exact squareness.

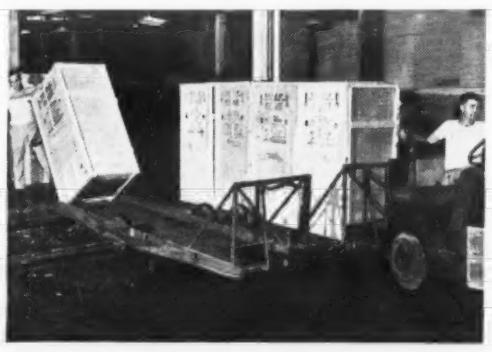


7. Finished porcelain refrigerator and range cabinets reach the assembly point where they are put on a conveyor, en route to final assembly.

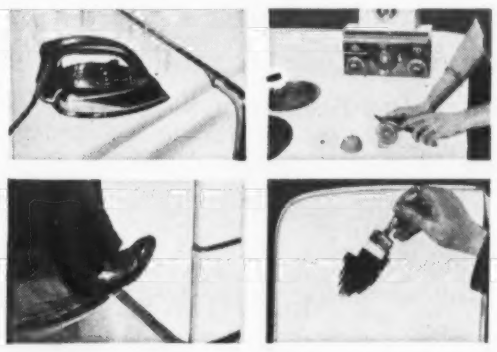


8. Even the color of Frigidaire Porcelain is watched by photo-electric cell to be sure that all parts are accurately matched. There is no guesswork.

9. Visual check and matching of color. This assures the over-all finish being the same shade of white when doors and other parts are attached.



10. After final assembly, inspection, test and special crating, tugs and trailers take porcelain-finished Frigidaire appliances to freight cars.

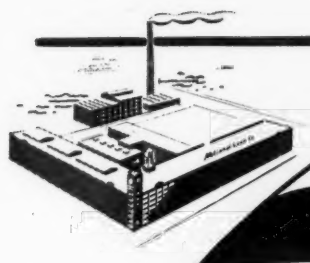


11. Proof of the enduring finish of Frigidaire Lifetime Porcelain is shown in actual tests with excessive heat, lemon juice, scuffing, and paint.

You're twice as sure with two great names FRIGIDAIRE made only by GENERAL MOTORS

Headquarters

REFRIGERATOR HARDWARE
for domestic, commercial and low temperature cabinets



SURFACE TYPE HARDWARE
"THRU THE DOOR" HARDWARE
EDGE MOUNTED HARDWARE
PLASTICS
DIE CASTING

NATIONAL LOCK COMPANY
Refrigerator Hardware Division
ROCKFORD, ILLINOIS

INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)

Pressure of 1,200 lb. p.s.i. (whatever that means) at room temperature is maintained by a dry ice rifle of .22 calibre.

However, when higher pressures needed for larger rifles and guns are desired, the magazine can be heated to increase the pressure of the carbon dioxide. Such pressure is governed by the difference in temperature between the surrounding material and the dry ice.

When the magazine is heated properly, dry ice can produce enough pressure to compare with the muzzle velocity of a weapon of any caliber.

It would be possible for a heavy artillery gun to fire continuously for about nine hours, if the magazine were equipped with 200 to 300 lbs. of dry ice, it is claimed. Large guns could be fired as rapidly as the smaller varieties if a swiftly rotating drum for feeding shells into the chamber could be contrived. Such a gun's firepower would be comparable to that of a battery of massed standard artillery pieces.

In cases where large gun crews are operating in enclosed places, it would be necessary to employ a blower to replace the air driven out by the carbon dioxide gas.

Advantages claimed for the dry ice rifle are manifold. Dry ice is far less expensive than gunpowder, costing only about 1/100 as much per shot. as many working parts as the standard rifle, which cuts down servicing difficulties. Dry ice ammunition weighs much less than comparable quantities of gunpowder, and cannot start a fire in the gun's vicinity. What's more, when the chamber is not loaded with ammunition, the weapon may be used as a fire extinguisher!

Fighting the Last War

Although selling prices and production costs of mass-produced dry ice guns would undoubtedly be much lower than those of standard types, marketers believe that their distribution may meet sales resistance, judging from the reception which guns employing air pressure or acetylene gas as a propellant have received from military buyers in the past (they always fight the *last* war.)

Explosives manufacturers would stand to lose only about 8½% of their sales, if carbon dioxide gas were accepted as standard for firearms, it is estimated. Military gunpowder has represented 7% of their incomes, and sporting powder 1½%, it is indicated by a 40-year average. their shirts on while they read this.

So DuPont and others can keep their shirts on while they read this.

The New Weather Man

As air conditioning protagonists, we're all interested in the weather. Well. . . .

Radar, as a means of weather predicting, offers spectacular possibilities, we hear. Storms a hundred or more miles distant can be detected, and their natures revealed, by the magic of radio waves.

Wartime uses of radar by the Army and Navy have resulted in the creation of a new sphere of weather analysis and forecasting technique. This is a fact which should excite more of us than it probably will.

Although the same principle is employed in all radar equipment—that of sending out radio waves which reflect back to the sender when they encounter a sufficiently dense object—the term "radar" covers a great variety of gear designed for varying purposes.

The meteorologists, though, are interested only in the microwave (quite tiny) types, which are relative newcomers to the scene.

Measuring winds aloft has been the simplest application of microwave radar science to weather predicting. The usual method—following a small balloon visually with instruments—normally cannot be applied when the skies are overcast, which is just when wind information may be most necessary.

However, in such weather, the balloon may be made visible to the radar apparatus by attaching a small reflector, so that it can be "tracked" automatically by standard sets, such as the SCR-584 anti-aircraft radar set which met with such great success during the recent war. This set is now proving to be of great assistance to AAF meteorologists in their pursuance of elusive hints as to coming weather conditions.

Seeing Storms

Another application of microwave radar to weather reporting is based on its ability to "see" storms. Although still a long way from perfection, this application produces images on the radar screen which reveal certain types of precipitation, such as raindrops, snow, and such.

Clearly visible in unmistakable patterns on the radar screen are the reactions from each type of precipitation, ranging from gentle rains to hurricanes.

The meteorologist can determine accurately by measuring these patterns the size, speed, and direction of movement in the precipitation areas, in addition to estimating their intensity and vertical extent. Although this type of study is of recent origin, it shows promise of becoming a mighty aid to research meteorologists.

Nor is this new science entirely a research tool. Radar storm detection has saved many lives by making it possible for pilots to steer a safe course through great expanses of heavy storm clouds.

Because it shows the "clear" area ahead, radar apparatus has directed pilots and air craft around dangerous, turbulent storm regions to ultimate "clear sailing."

Radar has also proven its mettle in the difficult job of predicting tropical weather, which is noted for its frequent and violent thunderstorms. When the practicality of this use was discovered, the AAF Weather Service requisitioned all suitable microwave radar equipment in sight.

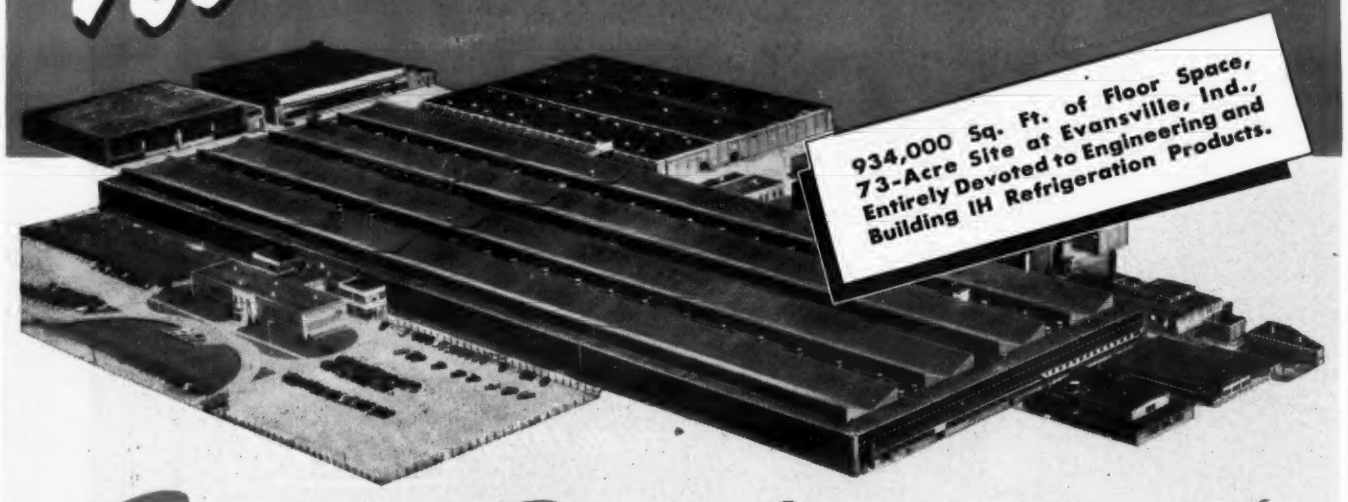
From War to Peace

Even if all further research turned out to be fruitless, radar has already contributed mightily to the safety of peacetime navigation by its new usefulness on ships and in the air, and by its employment at fixed locations, such as airports or hilltops, where a detailed knowledge of coming local weather is mighty important.

And, although further development of radar for peacetime applications will surely require large investments, its value in obtaining meteorological information would seem to justify research expenditures on a scale sufficient to reduce the cost and complexity of its present equipment.

Radar is here to stay.

Now... OUT OF THIS GREAT NEW PLANT


934,000 Sq. Ft. of Floor Space,
73-Acre Site at Evansville, Ind.,
Entirely Devoted to Engineering and
Building IH Refrigeration Products.

Comes a Great New Line of

INTERNATIONAL HARVESTER

REFRIGERATORS and FREEZERS

with NEW STYLING • NEW FEATURES • NEW CONVENIENCE

and Vast, New Dealer Opportunities

- *Powerful National Advertising*
- *Coast-to-Coast National Distribution*
- *Effective National Service*

The kind of advertising, distribution and service for which International Harvester is famous . . . plus prestige founded on 115 years of outstanding engineering and manufacturing leadership . . . all, together, back up International Harvester's great, new refrigeration line.

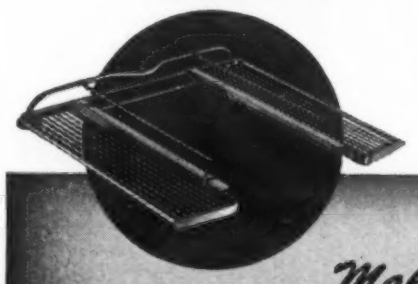
It's a product, and a program, to whet the appetite of any alert dealer. For information concerning open territory, communicate with the International Harvester branch nearest you.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL HARVESTER
Refrigeration

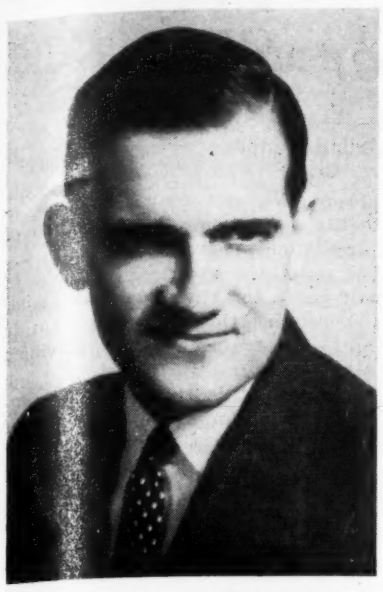
TWO THINGS ABOUT WHICH THE HOUSEWIFE BOASTS—1. THE NAME OF THE REFRIGERATOR SHE PURCHASED. 2. THE STAINLESS STEEL SHELVES IN THAT REFRIGERATOR.

WMP



WALL WIRE PRODUCTS COMPANY
11333 GENERAL DRIVE
PLYMOUTH, MICHIGAN
Makers of STAINLESS STEEL AND TINNED REFRIGERATOR SHELVES AND WELDED WIRE PRODUCTS

Joins Betz Corp.



RUSSELL A. JOHNSON

• • •

Johnson Gets Post as Assistant Chief Engineer

HAMMOND, Ind.—Russell A. Johnson, formerly in charge of engineering of air conditioning and commercial refrigeration installation at Frigidaire Sales Corp. of Chicago, has joined the Betz Corp. here as assistant chief engineer.

The Betz Corp. manufactures commercial cooling units.

A member of the American Society of Refrigerating Engineers, the American Society of Mechanical Engineers, and the American Society of Heating and Ventilating Engineers, Mr. Johnson served as production engineer in aircraft engine manufacturing for the Dodge-Chicago division of Chrysler Corp. during the war.

He worked on development of critical aircraft engine gears and did field engineering for Dodge covering B-29 manufacturing plants and bases. Just prior to the end of hostilities, he participated in an engine service test program conducted on fuel injection engines.

Airo Supply Co. Changes from Partnership to Corporation

CHICAGO—Airo Supply Co. here has been changed from a partnership to a corporation, E. P. Sorensen, president, and W. H. Hohne, vice president, have announced.

They added that the officers and directors of the corporation are the same principals who previously operated the business. All former policies will be continued, they said.

Airo is located at 2726-32 North Ashland Ave.

In the West it's
REFRIGERATION SERVICE INC.
Pacific Coast Supply Jobber since 1928
Your letterhead will bring our latest catalog—also our House Organ,
"The Liquid Line"
3109 Beverly Blvd.
LOS ANGELES 4, CALIF.

SAVE YOUR TIME
BUY BY MAIL

Bellmore, New York dealer writes:

"I am only too glad to recommend Airo Supply Company to anyone in this line of business, and I have done so many times already. The manner in which you do business is a real pleasure and I know you will satisfy any customer as you have me."

Air Conditioning and Refrigeration
Parts - Tools - Supplies
Shop Equipment
Request Catalog on Your Letterhead
AIRO SUPPLY CO., INC.
Dept. B, 2732 N. Ashland Ave.
Chicago 14, Ill.

OPA Permits Delco 9% Boost over 1941 Prices On Soft Coal Stokers

ROCHESTER, N. Y. — Authorization for Delco Appliance Division of General Motors to increase by 9.2% the Oct. 1, 1941, prices on its line of Delco Heat bituminous coal stokers is contained in Order 339, recently issued by OPA under Rev. SO 119.

The increase need not be put into effect, however, OPA said, if it results in lower prices than those established under MPR 591.

Resellers are permitted to add to their existing maximum prices the percentage increase in cost resulting from the adjustment granted by Order 339. This does not apply to manufacturers who purchase the stokers for use in the manufacture of other products.

In an opinion accompanying the order, OPA said bituminous coal stokers have been declared reconversion products under Appendix A of Rev. SO 119.

Promoted at Tyler

PAUL JACKEL

Tyler Fixture Corp.'s New England divisional manager since 1937, Mr. Jackel has recently been named general sales manager.

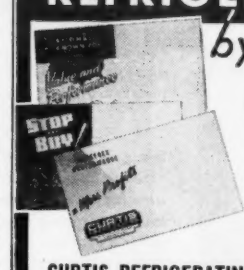
Gas Appliance Mfrs. Plan Atlantic City Show Oct. 7

NEW YORK CITY—In view of the many technological advances, creation of new products and processes, and use of new materials developed by the gas industry during the war, interest is running high in the national exhibition of the Gas Appliance Manufacturers Association, which will be held October 7-11 in Atlantic City.

H. Leigh Whitelaw, managing director of the association, announced that space reservations for the exhibition, to be held in the Atlantic City auditorium, exceeded 52,650 sq. ft. of floor space as of August 5. He added that these early reservations exceed the total space booked for any previous exhibition held by the industry.

More than 125 manufacturers from all sections of the country have already signed up for space, according to Association president Lyle C. Harvey. He forecast an attendance of more than 10,000 gas utility executives and others.

REFRIGERATION by CURTIS



Write for complete information.
Bulletins C-14-M, C-58, C-68-C
CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1912 Kienlen Ave. • St. Louis 20, Mo.

SUPERIOR VALVE & FITTINGS COMPANY
Pittsburgh 26, Pennsylvania
VALVES, FITTINGS & ACCESSORIES
For All
• Refrigeration
and
• Air Conditioning Systems

EATON PERMANENT MOLD
GRAY IRON CASTINGS

Free Machinability
Dense, Porous-Free Structure
No Leakage Under Pressure
Ability to Take Mirror Finish
Freedom From Distortion

These are qualities which recommend Eaton Permanent Mold Gray Iron Castings for literally hundreds of applications in the Refrigeration field. Millions of Eaton Permanent Mold Gray Iron Castings are used annually for such critical parts as valve bodies, pump bodies, cylinder heads, connecting rods, pistons, crankshafts, cylinder blocks, bearing retainers, pump heads, and many others.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product.

NEW BOOKLET Send for your copy of the new, illustrated booklet, "The Eaton Permanent Mold Process," which describes the Eaton Permanent Mold Machine, and the Permanent Mold Process. It also includes pointers on designing Gray Iron Castings to be produced by the Eaton Permanent Mold Process.

© 1946. EATON MFG. CO.

THE EATON PERMANENT MOLD MACHINE IS A SYMBOL OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED BY THE PERMANENT MOLD PROCESS.

EATON
MANUFACTURING COMPANY
FOUNDRY DIVISION
9771 French Road • Detroit 13, Michigan

New and More Efficient OIL SEPARATOR

..by ACME

An entirely new line of oil separators for all requirements from ¼ hp up to 10 hp.

●

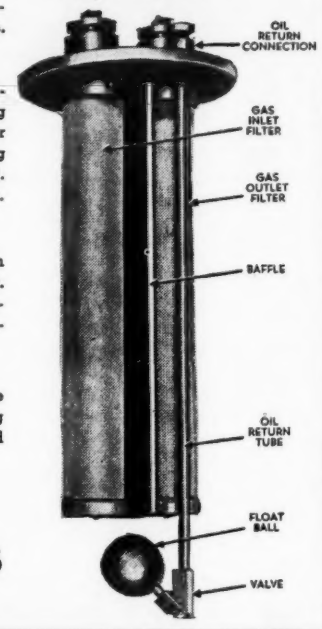
Six new models. Double efficiency obtained by doubling new separation cartridge for gas both going in and coming out. Velocity is controlled. Baffles prevent short circuit.

●

A multiple layer mesh screen filters at both inlet and outlet. Oil entrained in gas is removed and returned to crankcase.

●

Float ball and return valve readily accessible. Filtering Cartridges easy to remove and replace. Easy to service.



ACME INDUSTRIES
Jackson, Michigan

"The Streamliner"
BOOKKEEPING BOOK SIMPLIFIES

Bookkeeping and Tax Problems
for Small Business Firms.
Keep your records the Modern Way.
Have all information at hand when needed.

One Year Book $5.00
Order Now

GENERAL RECORD COMPANY
114 No. Hawthorne Blvd. Hawthorne, California

With Sales Only 1% of Total Appliance Demand, Co-ops Seek Larger Share

LAFAYETTE, Ind.—The cooperatives of the United States are at present handling only 1.3% of the total estimated national consumer demand for electrical appliances, it was revealed here at the recent meeting of the American Institute of Cooperation.

Addressing the gathering of over 1,500 co-op leaders from the United States and Canada, Grant Grebel, manager of the electrical appliance department of Midland Cooperative Wholesale, Minneapolis, said that, based on comprehensive surveys, a reasonably accurate estimate of the national purchases for the first unrestricted year has been set at $3,449,250,000.

The cooperatives at present, he continued, are getting only $45,634,300 or 1.3% of this total volume. "You can see," he added, "that we have not yet made a serious penetration of this market."

Discussing the topic "Merchandising and Servicing Electrical Appliances," Mr. Grebel stated that Midland Cooperative Wholesale expects to sell approximately $2,000,000 worth of appliances in 1946. Incidentally, this co-op which supplies six major commodities, petroleum, automotive, hardware, feeds, groceries, and appliances to rural members in Wisconsin and Minnesota, is not a tax-exempt cooperative.

Midland, Mr. Grebel explained, pays the federal corporation income tax and all other applicable taxes, exactly as any other commercial business, being thus on a plane of perfect tax equality with all other comparable business enterprises.

Examining the outlook for future appliance sales in Midland's territory, he pointed out that in the states of Wisconsin and Minnesota there are still over 200,000 rural homes without electricity.

"The REA and public utilities," he continued, "have promised electricity to all farm homes within the next 10 years. If each of these new users purchases the minimum complement of appliances, these still unwired farms hold another $190,000,000 of untouched appliance business. This, on top of our present market, presents a job that is staggering. I believe that our situation is fairly typical of the country as a whole."

Appliances Were Secondary

Mr. Grebel's paper was an illuminating and remarkably frank exposition of a much misunderstood sector of the electrical appliance distribution field. Six years ago, when he first came to Midland, he said, he found a "truly deplorable situation." The co-op, in seeking to gain volume, had taken on appliances "in much the same way as a hardware store takes on bolts and nuts.

"Up until this time," he said, "Midland's principal business was petroleum, so that all our appliance stores very naturally were gas stations. I found refrigerators, radios, and food mixers stacked about the gas stations, covered with dust, dirt, and motor oil. The men who were supposed to sell them often didn't have the slightest conception of how they were to operate or how installed."

It was then discovered, he said, that appliances sometimes need servicing. Being the combined sales and service man for two entire states, he related how he sometimes drove as much as 300 miles, only to remove the shipping bolts from a refrigerator or perhaps to replace a wornout belt. Since this would never do, a halt was called and Midland's appliance business completely reorganized.

Sales and Service Are One

Basically, Mr. Grebel said, this program is founded on the principle that sales and service of appliances are one and the same thing and cannot be separated. To standardize merchandising procedures, a contract was drawn in which Midland, as party of the first part agreed:

(1) to supply appliances of proven quality;

(2) maintain stocks of repair parts for all merchandise sold;

(3) maintain service facilities capable of servicing all appliances that cannot be serviced in the field;

(4) hold service training schools sufficient in scope to acquaint the local unit's appliance men with the merchandise, so they have the know-how to sell intelligently;

(5) furnish field service technically capable of getting sales and service assistance to local associations;

(6) prepare and distribute advertising and promotional material.

The local association desiring to distribute appliances agrees, for its part, to

(1) employ one man who can devote his entire time to promotion of an appliance program;

(2) maintain an adequate stock of repair parts for all merchandise sold;

(3) require the appliance man to attend all training schools which Midland calls on him to attend;

(4) have within the local unit's facilities a minimum floor space of 400 sq. ft. for display of appliances;

(5) participate in all promotional programs instituted by Midland;

(6) handle a complete line of appliances.

Clauses in the contract also cover warranty responsibilities of both parties and give reasons justifying concellation by either party.

Before a local unit of Midland's organization can add a line of appliances, it must file an application intended to give a clear picture of facilities and manpower available for handling appliances; the amount of space available for display; extent of any improvement of facilities under way, together with a statement that this unit desires to participate in the program.

Unit Signs Blanket Order

"If, from this application," said Mr. Grebel, "we find that the association meets our minimum standards, we execute the agreement described previously. They also sign what we term a blanket order, covering our known available supply of all electrical appliances, divided by the number of accounts participating in the program. This enables us to allocate to each local unit an equal quantity of merchandise as received."

Under the rigid standards set up approximately only 100 of Midland's 400 local member units have, to date, qualified as distributors of electrical appliances, Mr. Grebel stated. While this has caused dissatisfaction on the part of local units which could not qualify, they have exhibited a willingness to go along and plan for changes which would enable them to qualify in the future, he declared.

After a local association has been set up as a distributor, an appliance training program is immediately started, Mr. Grebel continued. In a series of schools covering refrigerators, milking machines, heating equipment, water systems, and miscellaneous appliances.

Just Getting Under Way

Actually this program is just getting under way, he said, but to date 380 students have attended these one-week training courses for which all expenses, including travel and meals, are paid by Midland. The milking machine school is held at the Waukesha, Wis., factory but all others convene at Midland's Minneapolis headquarters. Class enrollment is held close to 15, so that each student has opportunity to work with the apparatus which is being studied.

While "salesmanship" is a word usually mentioned in a hushed voice in cooperative circles, the need for it is found in every phase of Midland's program, Mr. Grebel declared.

(Concluded on next page)

CHRYSLER AIRTEMP

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Co-op Claims 'Shortcuts' In Production, Distribution, and Servicing Appliances

(Concluded from preceding page)

For an urban appliance merchandising operation it has been found that the minimum floor space considered adequate for display is approximately 3,000 sq. ft. Applied to rural cooperative outlets, he said, this would be tantamount to saying that the co-op could not enter into the appliance business. This floor space requirement, as agreed to in the contract, has, therefore been cut down to a minimum of 400 sq. ft.

The local associations are not encouraged to set up elaborate servicing departments, he said, in further qualifying Midland's service attitude.

"We encourage them to perform all the services that happen frequently enough to make it economical and sound for them to perform," he explained. "Service of a more complicated nature, requiring extensive equipment, is handled in our regional repair shop at Minneapolis.

"We specifically advise the local unit not to overexpand its service facilities or to encourage taking on service responsibilities of other appliance distributors. We consider our prime job to be that of distribution."

Shortage of Personnel

The organization's greatest present weakness, Mr. Grebel said, is a lack of sufficient well-trained personnel. Available now, he said, are only 109 persons to do a distribution and servicing job on $2,000,000 worth of appliances. This force, he indicated must be expanded.

The question "Why should cooperatives handle appliances?" Mr. Grebel said, can be answered by asking four additional questions, namely:

(1) is there a genuine need for the products under question?;

(2) is there an opportunity to improve upon the already existing services?;

(3) can the cooperative create a saving for its members through this type of service?; and

(4) should the cooperative plan to control its own source of supply?

Accompanying each question with reasons why, Mr. Grebel declared that the answer to all four questions is "definitely yes."

Elaborating on the fourth query, "Should the cooperative control its source of supply?" Mr. Grebel said the answer should be qualified with two conditions.

"First," he continued, "before we can control a source of supply, we must have sufficient volume to make control possible, while the second qualifying condition is the degree of competition in this particular field of manufacture."

Through National Cooperatives of Chicago, the group purchasing agency which serves 20 U. S. and Canadian regional cooperatives, including Midland, he declared, it is possible to control sources of supply where it would be entirely out of the question, if such purchases were to be considered individually by each regional wholesale.

Regarding the competitive angle, he added that "if the field is highly competitive, it is seldom that additional gains can be made by attempting to control a source of supply, as usually there already exists a high degree of efficiency."

Explaining "what I mean by control of a source of supply and why and how it is accomplished," Mr. Grebel said there are two reasons for control, one being to assure a proper standard of quality and the other to gain manufacturing savings.

"Control can be accomplished in one of two ways," he continued. "The most obvious way is to buy or build our own manufacturing facilities. This method should only be attempted where a long and continued demand for a product is assured. If we lose sight of this fact our original investment will be out of all proportion to any possible saving.

"The second and far simpler method of control is the concentrating of purchases to the extent of 20% of the manufacturer's producing capacity. This percentage figure is relative to the type of product under consideration. Very few manufacturers will permit any buyer to take over 40% of their production, as at this point they lose virtual control of their factory. This lesson has been taught to many unwary concerns by our mail order house friends."

Demand for Milking Machines

Applying these principles to a specific product, Mr. Grebel took milking machines as an example. Since the known national demand for these machines is about 100,000 a year, there is a definite need for milking machines, he pointed out.

"By careful study," he continued, "National Cooperatives decided that it could improve upon the existing service being rendered to milking machine users and at the same time create a considerable saving. National therefore concentrated our purchases with the Universal Milking Machine Co.

"Had this company been aggressive and wide awake, I doubt very much whether it would ever have been sold to National Cooperatives. But, as our purchases increased, our take got out of proportion to their provided distribution and, as the squeeze became more and more acute, in a moment of desperation they offered to sell their company.

"The cooperative took over and immediately expanded production until today it stands at over four times that of the best production year under the former private management. Actually, we are this year manufacturing approximately 25% of the total milking machines made in the United States. Even in view of this increased production, the supply of milking machines has never been adequate to meet the demand."

Analyzing the consumer's dollar and using $100 as a unit of sales, Mr. Grebel submitted figures which he says show a savings of almost 20% is possible through cooperative distribution of appliances.

"You may question by what magic formula the savings of 20% can be accomplished," he said. "It is not magic. It is a proven fact that we can reduce manufacturing costs by approximately 15% by reducing the manufacturer's promotional expenses. At the regional level, another 7% can be saved largely through a reduction in selling. At the local level, because of the lower operating expenses of cooperatives, it is possible to save another 8%.

"This saving to the consumer has not been taken out of the actual cost of production in reducing prices to the producer of the raw materials or by reducing wages. It is simply a reduction in the cost of distribution. This analysis would indicate that not only should co-ops go into the appliance field; they MUST go into it."

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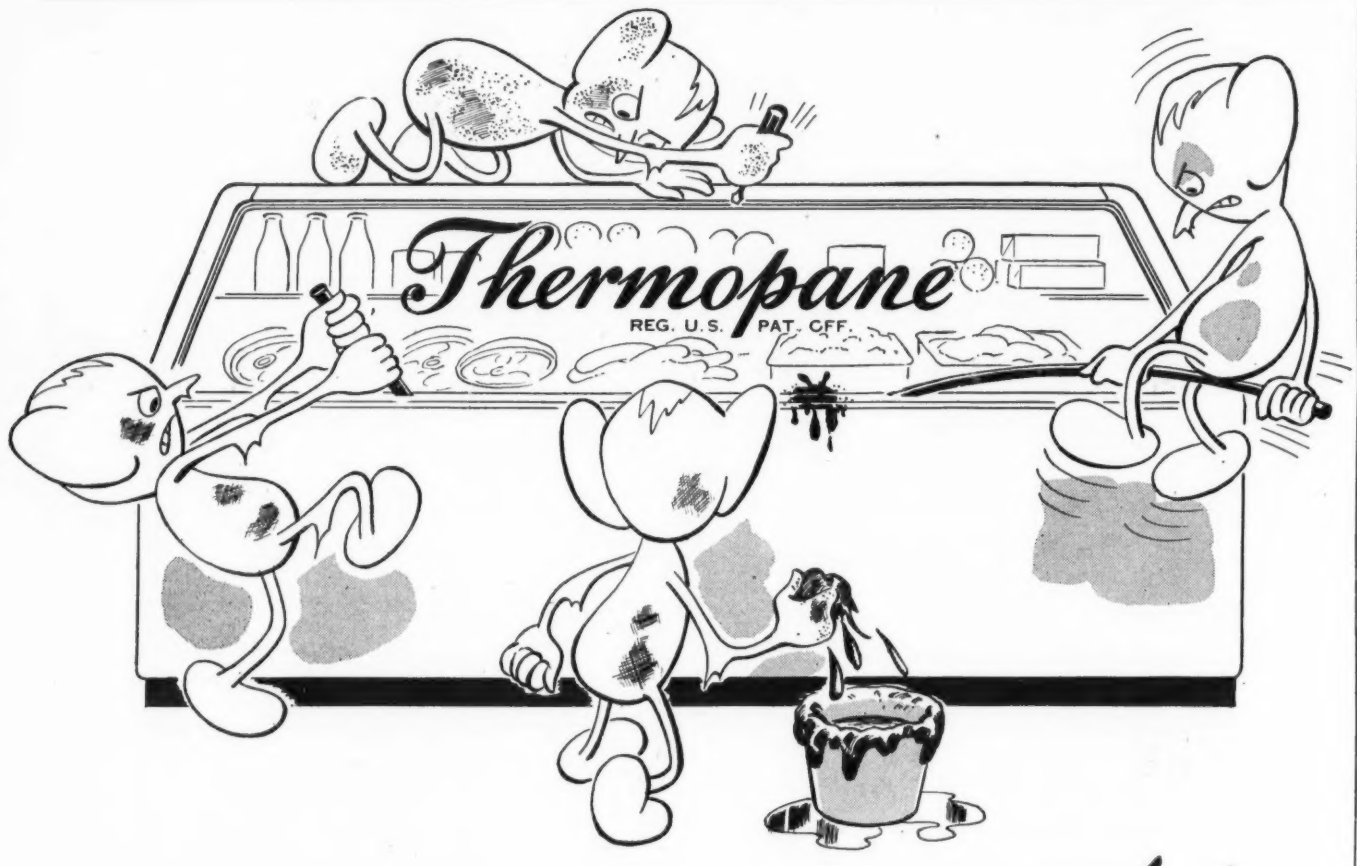

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Good Seeing means *Quick Selling* when frozen food cases are equipped with Libbey · Owens · Ford *Thermopane*—the time-proved insulating unit. The metal-to-glass Bondermetic seal guards against the entrance of dirt and moisture . . . helps to assure clear vision in *Thermopane*-equipped food cases.

Thermopane's inner glass surfaces are specially washed and the insulating air between is cleaned, dried and hermetically sealed at the factory. Thus clear vision is built into each unit.

Thermopane is factory-fabricated to specifications proved practical by laboratory research and field tests. It is as easy to insert as a single pane of glass—an important factor in reducing installation costs, both for original equipment and for field replacements.

For prices and specifications write Libbey · Owens · Ford Glass Company, 12106 Nicholas Building, Toledo 3, Ohio.

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1. INSULATING AIR SPACE. The air inside a *Thermopane* unit is scientifically cleaned, dried and hermetically sealed at the factory. These air spaces give *Thermopane* its high insulating efficiency.

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AIR CONDITIONING AND REFRIGERATION News

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Wait 'til the Girls Hear About This

TWENTY years ago, when the writer was a freshman in high school, he tried out for the debating team. The two propositions we were asked to argue ran about as follows:

1. RESOLVED: That America must adopt the closed shop.
2. RESOLVED: That woman's place is in the home.

Without hesitation, we chose the negative side of both propositions. And nothing we have observed and learned since has provided a single decent reason for changing these early adopted attitudes.

Of course, not everybody will agree with these premises. For instance: In taking exception to a recent editorial in the NEWS, an editorial which presented the thought that the merchandising of labor saving home appliances might alleviate the shortage of domestic servants, a subscriber wrote:

"What will become of our family life, our ideals and our homes when the women all become emancipated? . . . I do not think any normal woman when she is young and still has her ideals has any greater desire than to live and do all her work in her own home. . . . This is the way God intended man to live."

Our notion is that this may be the way most *men* may want to live, but it isn't the way God intended *women* to live.

There's an old story about a militant equal-rights-for-women exhorter who, in the middle of her speech, shouted:

"There are only minor differences between men and women."

From the back row of her audience a man arose and heckled:

"Thank the Lord for those minor differences!"

To men, that may seem funny. Nevertheless, the equal-privileges-for-women advocate was right. Women are human beings, just like men. They have the same varied endowments of talent, the same differences in taste, the same dissimilarities of physical and mental capacities.

The day when we men could subjugate them and enslave them ended in an inglorious sunset several years ago.

It's perfectly ridiculous to force all women into an identical profession, nowadays. Some women, to be sure, are content to spend 14 hours a day cooking, cleaning, sewing, scouring dishes, making the beds, dusting, rinsing diapers, weeding the garden, buying groceries, putting up a Good Front for the Old Man, and minding the children.

Some of them even possess natural talent for all these various forms of day labor and high intrigue. But they are the exceptions which prove the rule.

Should all men be required to spend their days at bookkeeping, ditch-digging, and house-painting, while women earn the family incomes by engaging in whatever profession they find themselves most proficient? Can we answer that question in the affirmative? Of course we can't.

"What will become of the family, and the children," the subscriber asks, "when women become emancipated?"

Friend, that universal system of slavery to household manual labor to which most women find themselves committed is one of the chief reasons underlying our alarming juvenile delinquency rate. It also helps explain the fact that one marriage in three today ends in divorce.

When women must drudge all day at menial tasks they hate, their children suffer. And so do their husbands. Both are neglected, snarled at, and often hated out of sheer boredom and exhaustion. Is that good?

That "keep women down" theory reminds us of the hillbilly who advised his son on the eve of the latter's marriage: "You gotta keep women in their place, so keep 'em barefoot and pregnant."

The subscriber accused us of advocating the increased use of home labor-saving appliances because we want to help the Big Corporations "bring in the necessary dough."

Nuts. That's important, sure. But it isn't nearly so important as is anything which will help "free the slaves" (the women).

Our editorial pointed out that the hired "maid" is fast disappearing from the American scene. It suggested that the answer to this phenomenon—not only for those who can afford "help" but for the vast majority of families which can't—is the more widespread distribution of time-saving, labor-saving, nerves-saving modern electrical appliances.

Any man who doesn't want to "emancipate" women from their tradition-appointed burden of onerous, back-breaking drudgery will have some explaining to do when the women hear about it.

More Manufacturers Tell Their Plans For Exhibits at All-Industry Show

Editor's Note: If you're planning to attend the All-Industry Show in Cleveland Oct. 29 to Nov. 1 (and who isn't) you will be interested in what exhibitors plan to display. Much information was published in the Sept. 30 issue of the NEWS. Here is some more:

The Gilmer Co.

A special display of 50 V-belts covering their varied uses in air conditioning and refrigeration servicing will be on exhibit at the booth operated by the Gilmer Co., of Philadelphia.

Arranged on an eight-hook wall display panel, the exhibit includes a Handimeter (for measuring length and cross-section of belts), and the "Belt Bible." Features of the assortment will cover household and commercial refrigeration, air conditioning, ice cream plants, home freezer units, home locker plants, frozen food lockers, as well as milk and bottle coolers.

Those in attendance at the show will be: William H. Lehr, sales manager; Edwin F. Wood, assistant sales manager; Harry W. Weihenmayer, advertising manager; and William E. Mettler, Neil Chapman, and Walter David, district managers.

U. S. AIRco

Five models of air handling equipment produced by the United States Air Conditioning Corp. will be shown at the show in Cleveland, it is reported from Minneapolis. Items to be displayed are the company's refrigerated Kooler-aire, evaporative condenser, unit cooler, air conditioner, and direct expansion coil.

Goodyear Tire & Rubber Co.

FF Pliofilm, a special new packaging material said to nearly eliminate loss of moisture in frozen foods during low temperature storage, will be displayed at Goodyear's booth during the show.

Proper packaging with this material, explains F. E. Wilson, frozen food specialist with Goodyear's Chemical Products division, prevents "freezer burn." In addition, FF Pliofilm, which is claimed to be flexible at temperatures as low as -20° F., possesses the same heat-sealing qualities of conventional Pliofilm and can even be sealed against the frozen product.

Representing Goodyear at the show will be: Mr. Wilson; A. B. Clunan, manager of direct packaging sales; Robert Kilgore, Robert Anderson, and J. H. Conrad, from the Pliofilm department; and Dr. M. D. Coulter, food research specialist.

Sterling Refrigeration Corp.

Three units manufactured by the Sterling Refrigeration Co. of Washington, D. C., will be on exhibition at the firm's booth, reports Elvin C. James, vice president.

They are: The Sterling 3-hp. Commercial Air-Cooled Air Conditioner, the Sterling Bus Air Conditioning Unit, and the Sterling Truck Refrigeration Unit.

Besides Mr. James those manning the display will be: George W. Carroll, president; Allen Trask, chief engineer of the Sterling Refrigeration Co.; and James Goggins, chief engineer of the Sterling Mfg. Co.

Eston Chemicals, Inc.

Although sales of Eston refrigerants are confined principally to western United States, Eston Chemicals, Inc., will have an exhibit featuring a model of the firm's refrigerant testing set. Also to be shown will be a blow-up of an Eston cylinder showing the distinctive banding, and a number of actual cylinders (well secured).

Among those in attendance will be: A. M. Esberg and W. E. Horn.

National Gypsum Co.

Exhibition of a new fireproof cold storage construction at the show to promote Zerocel insulation is planned by National Gypsum Co.

Zerocel is a semi-rigid, felt-type mineral wool insulation now being used in wood frame construction.

Exposition representatives of the company will be Fred Chambers, L. O. Steinle, L. G. Harriman, Jr., S. G. Stevens, C. W. Hunt, D. A. Homman, and H. D. Blakeslee.

Black, Sivalls & Bryson, Inc., Safety Appliance Division

The "Atom," a new "safety head" not previously offered for sale, will be among the pressure relief devices shown at the exposition by Black, Sivalls & Bryson, Inc.

Among B. S. & B. personnel scheduled to attend the show are C. E. Huff, sales manager; J. F. Myers, assistant sales manager; and E. V. White, Ohio district representative.

Thermal Co., Inc.

If Northwesterners attending the exposition don't know how to get in touch with that important person or need a place to meet that friend, Thermal Co., Inc., wants them to know Booth No. 409 will be at their service.

"The All-Industry show at Cleveland will be a tremendous affair," the company predicts. "Thousands of visitors will crowd the exhibit floor and make it difficult for you to meet your friends and arrange the interviews you consider important.

"Visitors from the Northwest are invited to make our Booth No. 409 on the main floor your home. We can help in arranging appointments and introducing you to those you wish to contact."

Utilities Engineering Institute

Publication of a tabloid newspaper devoted to news coverage of the All-Industry Exhibition is planned by the Utilities Engineering Institute of Chicago.

As in former years, the paper will be called the "Exhibition Review," the school has announced.

The Institute's own booth will depict the scope of the organization and its facilities. No special events are planned.

Representing the Institute at the Exhibition will be: E. P. Sorensen, president; W. H. Hoehne, vice president; F. Dillon Burroughs, educational director; N. T. Hall, director of publications; and H. E. Clarkson of the publications staff.

Marathon Corp.

Marathon Corp. will put most of its exhibit emphasis on Tite and Freeztex packaging for locker plants.

According to the firm, Tite and Freeztex are special laminated wrappers developed by it for the packaging of meat, poultry, game, fish, fruits, and vegetables in locker plants.

In addition, Marathon's display will include certain packaging materials which it supplies to commercial frozen food processors for processing their own products.

Universal Cooler Corp.

Universal Cooler, of Marion, Ohio, will concentrate its exhibit on a set-up indicating the location of its various service parts wholesalers throughout the United States.

According to Jack L. Danner, advertising and sales promotion manager, those who will attend the Exposition beside himself are: T. S. Pendergast, director of sales; W. W. Higham, director of engineering; Horton L. Scott, service manager; A. E. Cadwell and E. D. Halsey, sales engineers; and K. C. Goodrich, manager of the order department.

Bridgeport Thermostat Co.

Representative samples of bellows and bellows assemblies used in the industry will be shown at the booth of the Bridgeport Thermostat Co., Inc., of Bridgeport, Conn. Manning the firm's exhibit will be J. F. Mayne, assistant sales manager; C. F. Ahlheim; and J. A. Kinnard.

The Pacific Lumber Co.

Palco Wool, made from the bark of the California Redwoods, will be displayed at the exposition by The Pacific Lumber Co.

Edric E. Brown, John H. Klass, and Ray P. Klass will represent the firm.

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Temprite units are ideal for both reconditioning (where the condensing unit is available) or new installations.

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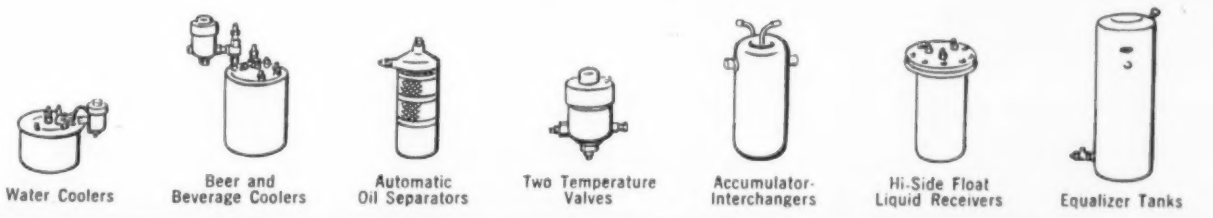

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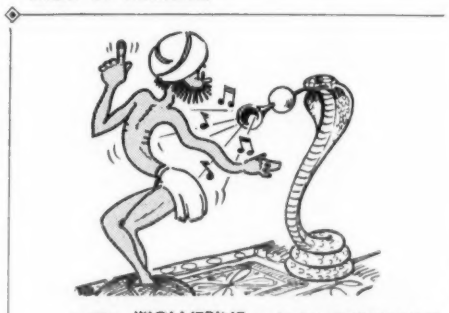

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Air Cycle Refrigeration System Rated At '20 Residences' Cools New Airliner

SANTA MONICA, Calif.—Complete air conditioning, including radiant heating, cooling, and humidity control, is among the many "firsts" claimed for the new 52-passenger four-motored DC-6 airliner developed by Douglas Aircraft Co. here.

Designed for high-altitude flights, the airliner cabins are automatically pressurized with tempered air. Cooling is accomplished by an air cycle refrigeration system using equipment produced by AIResearch Mfg. Co., while heating is provided by a gasoline-burning Surface Combustion Corp. unit.

The cooling system is said to be powerful enough to air condition 20 residences. Compressed air from two superchargers located in the outboard nacelles of the plane flows through an "aftercooler" where outside air cools the compressed air somewhat, thence to the expansion turbine which reduces the temperature of the air by taking energy from it, and finally to the cabin through suitable control means.

This system is similar in principle to the cooling arrangement on the Lockheed Constellation, which was described in detail in the Jan. 21, 1946, issue of AIR CONDITIONING & REFRIGERATION NEWS.

Radiant Heating Employed

Radiant heating is achieved by using the fuselage floor and side panels as ducts for the heated air. The main air supply duct runs down the middle of the cabin, the aisle floor between the seats serving as the top of the duct. Branch ducts carry heat to panels between the outer skin and the cabin where it connects to discharge outlets above the windows. In this way both the floor and the sides of the cabin radiate heat.

Air conditioning systems for the flight compartment and passenger cabins are controlled separately. The heart of the cabin air temperature conditioning system, states Douglas Aircraft Corp., is the mixing valve, which takes cold air from the expansion turbine, cool air from the aftercooler, warm-pressurized air from the engine-driven superchargers, and hot air from a Surface Combustion heater and mixes them in the proper proportions to give a desired cabin temperature within the limits of 65° and 85° F.

Cold air from the cooling system flows directly to individually controllable cabin outlets as well as to the mixing valve for conditioning cabin air. Manipulation of individual outlets will tend to vary cabin temperature, but the automatic control system detects intra-cabin temperature variations and maintains adequate control of the over-all cabin temperature, Douglas says.

How System Is Controlled

"The cabin air conditioning system is controlled by turning the cabin temperature rheostat to a desired temperature setting," states Douglas. "Thereafter, the system is entirely automatic and requires no further attention. In case of failure of the automatic control system, electrical push-button controls are provided so that the cabin attendant can manually override the automatic controls.

"During flight, the air conditioning system is normally operated by adjusting the temperature control rheostat to the desired general cabin temperature. Passengers can obtain cool air from individual outlets at each seat location in any desired amount. The automatic controls will still maintain a constant general cabin temperature."

Operation of the air conditioning system when the airplane is on the ground is identical to normal operation, except for the amount of temperature control available. For ground operation, the cabin can be heated or ventilated, but cabin temperatures colder than the outside air can be obtained only when the outboard engines are running.

"Heart of the air conditioning system," as stated previously, is the temperature control mixing valve which, through three ports, takes in and mixes cold air from the expansion turbine, cool air from the aftercooler, warm-pressurized air from the engine-driven superchargers, and hot air from the heater unit.

The mixing valve is controlled electrically by a motor actuator mounted on the forward end. This actuator responds to thermostats located throughout the cabin and air ducts and drives a camshaft in the mixing valve. Three cam followers on the camshaft are connected to butterfly valves in each of the three mixing ports. As the motor actuator rotates the camshaft from one extreme position to the other in accordance with cabin temperature requirements, the three inlet ports go through a complete cycle of opening and closing to admit cold, warm, or hot air.

On the aft end of the mixing valve is another motor-actuated butterfly valve to control the supply of hot air to the windshield of the cockpit to prevent icing.

Two other important units in the air conditioning system are the cabin aftercooler and the expansion turbine. The latter is fitted with an axial flow fan.

Purpose of Aftercooler

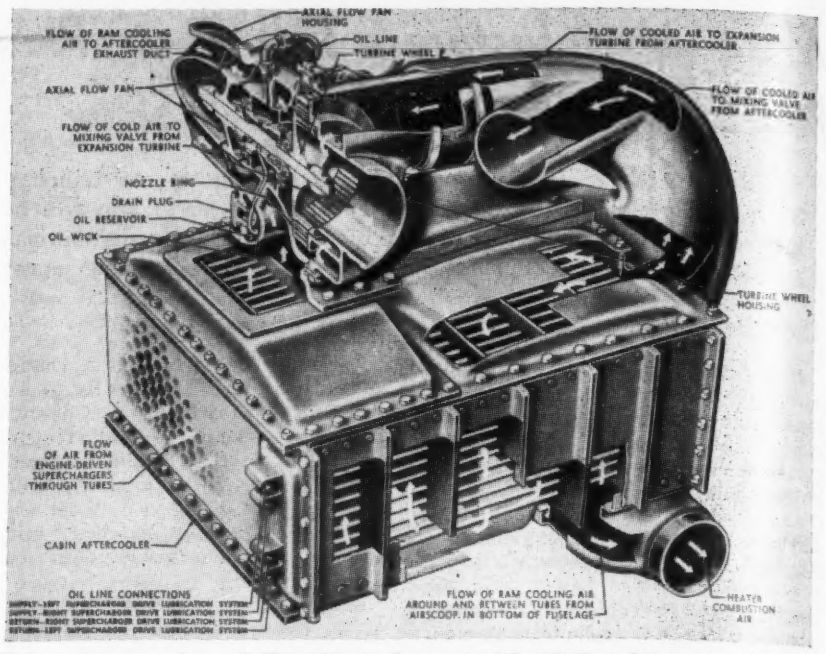
The aftercooler is made up of a quantity of flattened thin-wall aluminum tubes passed through and secured to header plates and spacer plates. Hot compressed air from the superchargers in the outboard engine nacelles enters the aftercooler and passes through the tubes. "Ram air" (outside air "rammed" through an opening in the fuselage by the force of the plane traveling at high speed) passes between the tubes.

The cooler ram air crosses the tubes three times and reduces the temperature of the supercharged air before the latter flows into the expansion turbine. The amount of cooling accomplished by the aftercooler is varied by automatic controls which position a flap in the ram cooling air exhaust duct. From the aftercooler the ram air is carried overboard.

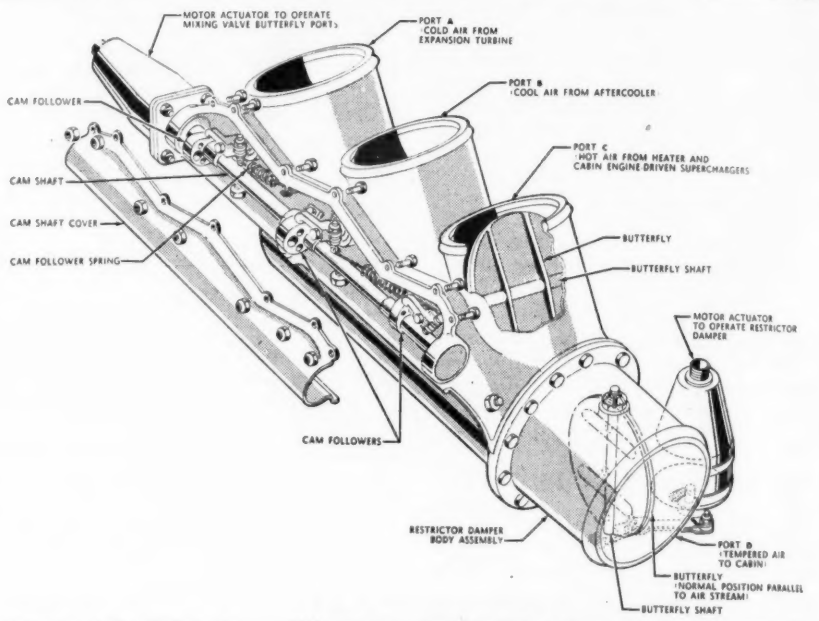
Besides cooling the supercharger air, the aftercooler also cools oil for the superchargers.

Mounted on the aftercooler is the expansion turbine where the supercharged air passes through nozzles in the turbine, thence to mixing valve and cabin. As it drives the turbine wheel at high speed, the air is reduced in temperature well below the ambient. An axial flow fan driven by the expansion turbine aids in drawing ram air through the aftercooler.

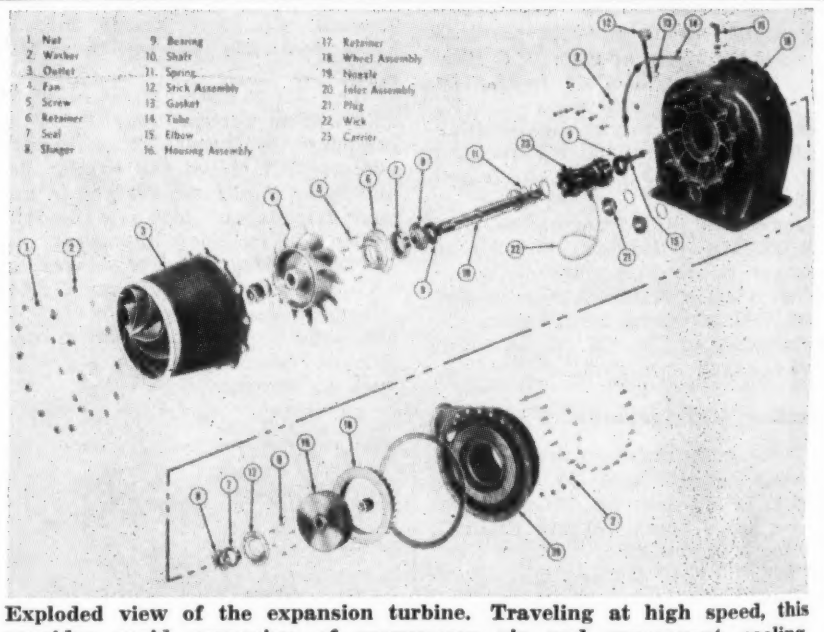
Humidifying of the cabin air is accomplished by a manually controlled water boiler heated by three immersed electrical resistance elements. Water for the humidifier, located in the air conditioning compartment, is supplied from the airplane's water supply system, the water level in the humidifier being maintained automatically. A four-position selector switch permits the cabin attendant to set the humidifier at low, medium, high, or off. It cannot be operated while the plane is on the ground.


AXIAL FLOW FAN HOUSING
FLOW OF RAM COOLING AIR TO AFTERCOOLER EXHAUST DUCT
OIL LINE
TURBINE WHEEL
FLOW OF COOLED AIR TO EXPANSION TURBINE FROM AFTERCOOLER
AXIAL FLOW FAN
FLOW OF COOLED AIR TO MIXING VALVE FROM AFTERCOOLER
FLOW OF COLD AIR TO MIXING VALVE FROM EXPANSION TURBINE
NOZZLE RING
DRAIN PLUG
OIL RESERVOIR
OIL WICK
TURBINE WHEEL HOUSING
FLOW OF AIR FROM ENGINE-DRIVEN SUPERCHARGERS THROUGH TUBES
CABIN AFTERCOOLER
OIL LINE CONNECTIONS
FLOW OF RAM COOLING AIR AROUND AND BETWEEN TUBES FROM AIRSCOOP IN BOTTOM OF FUSELAGE
HEATER COMBUSTION AIR

This cut-away view of the aftercooler assembly of Douglas DC-6 airliner air conditioning system shows the path of airflow. It serves as a heat exchanger between hot compressed air from superchargers and cooler "ram" air from outside.

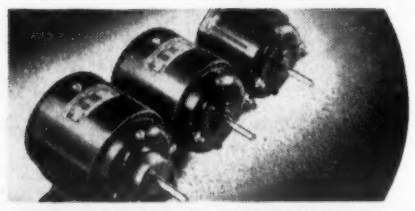

MOTOR ACTUATOR TO OPERATE MIXING VALVE BUTTERFLY PORTS
PORT A (COLD AIR FROM EXPANSION TURBINE
PORT B (COOL AIR FROM AFTERCOOLER
CAM FOLLOWER
PORT C (HOT AIR FROM HEATER AND CABIN ENGINE DRIVEN SUPERCHARGERS
CAM SHAFT
CAM SHAFT COVER
CAM FOLLOWER SPRING
BUTTERFLY
BUTTERFLY SHAFT
MOTOR ACTUATOR TO OPERATE RESTRICTOR DAMPER
CAM FOLLOWERS
RESTRICTOR DAMPER BODY ASSEMBLY
PORT D (TEMPERED AIR TO CABIN)
BUTTERFLY (NORMAL POSITION PARALLEL TO AIR STREAM)
BUTTERFLY SHAFT

Heart of the DC-6 air conditioning system is this valve which automatically mixes proper proportions of cooled and heated air to achieve desired cabin temperatures.



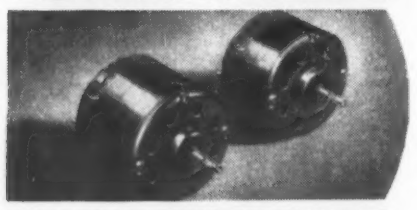
Exploded view of the expansion turbine. Traveling at high speed, this provides rapid expansion of compressor air and consequent cooling.

DEPENDABLE Redmond MICROMOTORS



AC—TYPE "T"

Totally enclosed 4 pole shaded pole Type "T" Micromotors are in sizes up to 1/25th horsepower. Built with sturdy die cast frames and Flush-Weld rotors. Air-Stream enclosed fan cooling provided on models T-110 and T-123. Compact model T-121, with external fins, is ideal for fan applications.



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4 pole shaded pole Micromotors built in sizes up to 1/40th horsepower. Rugged pressed steel cases designed for internal ventilation. Extra capacity lubrication gives these Micromotors unusually long life. Internal ventilating fan available for heavy duty use.

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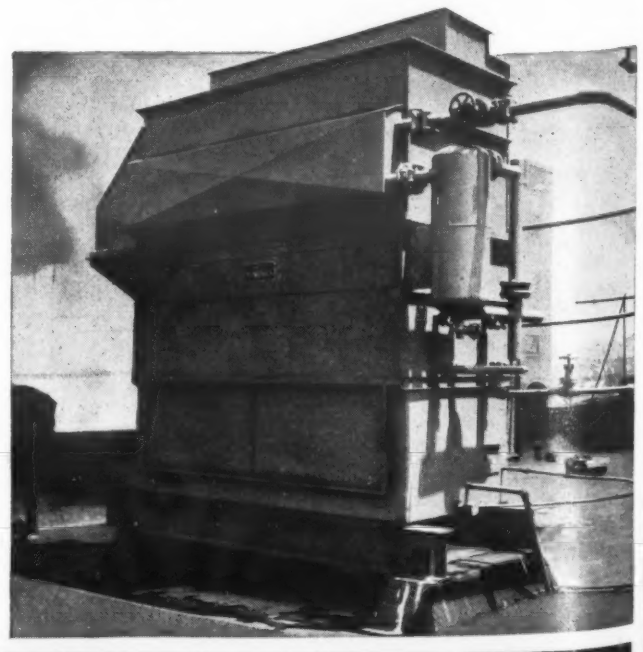

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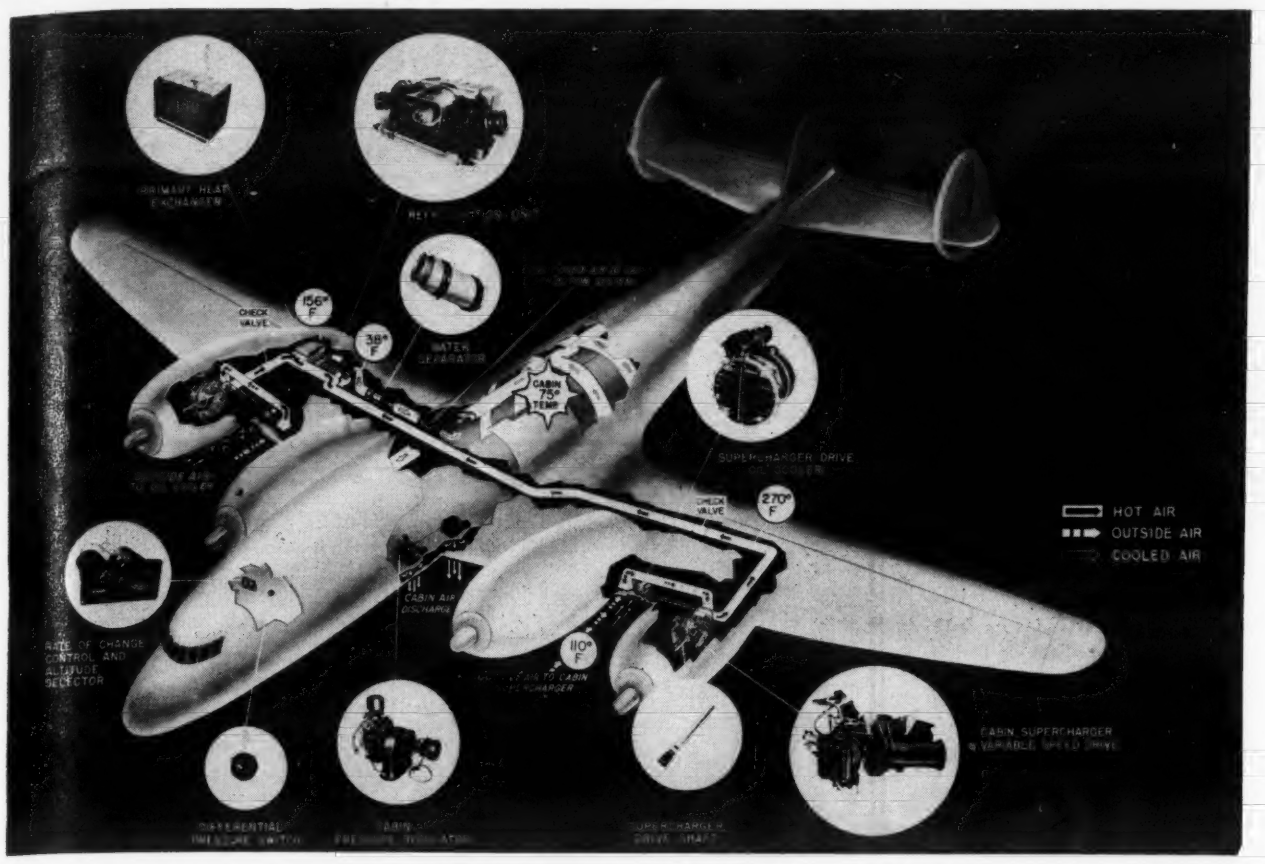
West Coast Firm Specializes In Airliner Cooling Systems



Major units of a typical aircraft air conditioning system (the Lockheed Constellation) are made by AiResearch Mfg. Co. of Los Angeles. Above can be traced how outside air enters at 110° F., is compressed to 270°, then cooled to 156° in the primary heat exchanger, and finally dropped to 38° F. in the expansion turbine. Cabin air temperature is maintained at about 75° F.

* * *

Light Air Expansion Turbines Can Produce 12 Tons of Cooling, Claims Manufacturer

LOS ANGELES — Air expansion turbines weighing from 3 to 65 lbs. and capable of producing up to 12 tons of refrigeration through the expansion of compressed air have been designed and are in production for several types of airliners, including the Lockheed Constellation, Douglas DC-6, and others, reveals Cliff Garrett, president of AiResearch Mfg. Co. here.

These developments are the culmination of research begun in 1939 when AiResearch was established as a division of the Garrett Corp., an aircraft engineering sales organization here.

Part of Program for Cabin Pressurizing

The air refrigeration system was developed as part of the company's general program to control air conditions within the cabins of high-altitude planes. Originally this program concentrated on the pressurizing of cabins in military planes and led to the production of cabin pressure control instruments and other products employed in the famed B-29 super-forts.

Cabin pressurizing provides sufficient oxygen and air pressures to keep personnel comfortable without the aid of auxiliary oxygen supplies while the plane is traveling in high altitudes. Such methods also control the change in air pressures within the cabin as the plane ascends or descends to prevent discomfort or blackouts.

High altitude flying—at 20,000 ft. or more—is preferred by airlines to avoid storms, turbulent air, and mountain hazards. It also permits greater speeds and economy of operation.

The whole problem, according to AiResearch, required methods to:

(1) Compress the air within the cabin to the point where sufficient oxygen is present to permit breathing without the air of auxiliary oxygen,

(2) Provide sufficient quantity of air flowing through the cabin to provide proper ventilation,

(3) Control the pressure of the air within the cabin,

(4) Control the temperature within comfortable limits, and

(5) Control the humidity within comfortable limits.

"It's really very simple," comments Walt Ramsaur, chief engineer of AiResearch. "All we have to do is compress the thin outside air, pump it into the cabin, and control temperatures to suit yourself."

The catch is, he points out, that conventional air conditioning systems are too bulky, too heavy, and require too much additional power.

An integral part of the cabin air control system is the cabin pressure regulator. Weighing from 5 to 8 lbs., this regulator provides automatic control of cabin pressure, including the rate of change of pressure. It operates in conjunction with a preselector control mechanism, which permits cabin altitudes (air pressure) to be selected before the plane leaves the ground.

Another important element for cabin pressurizing developed by AiResearch is the supercharger for compressing the thin outside air encountered at high altitudes. This supercharger incorporates a variable speed drive permitting an even controlled flow of compressed air to the cabin regardless of engine speed. As yet, however, this supercharger has not been tested in actual flight.

Refrigeration Needed For Two Reasons

The refrigeration unit is required for two reasons. Compressing the outside air raises its temperature, sometimes as high as 160° F. above its initial temperature. Also, heat is generated by the speed of the plane, the sun, engine, electrical equipment, and passengers. A plane traveling at 500 miles per hour in 100° F. air for example, would have a surface temperature of 142° F., says AiResearch.

The desirable objective is to obtain a constant cabin temperature of 75° F. in the air or on the ground when the initial temperature of the air being supplied may vary from -67° F. to 500° F., the latter if the air is supplied from the compressor of a jet engine.

"Known means of cooling air on the ground, such as dry ice and liquid refrigerants, were impracticable for airplanes because of excessive weight and various dangers," the company states. "The problem was to develop a new, highly efficient means of refrigeration which would be capable of tremendous temperature drops and yet meet aircraft requirements of light weight and small size.

"The job is even more pronounced on jet-propelled ships, as the compressed air for the cabin is bled directly off the turbine engine. On the Lockheed P-80, for instance, the compressed air is approximately 475° F., about the same as the hottest air used in an ordinary cooking oven, and in a distance of less than 12 ft. between the engine and the cabin it must be cooled to usable temperatures of about 40° F., which results in a cabin temperature of 80° F."

In the air expansion system developed by AiResearch, cooling is accomplished by taking "work" out of the compressed air.

'Tornado In a Teapot'

"Dramatic example is the 'Tornado in a Teapot' midget turbine, no bigger than a man's fist and weighing only 3 lbs. with parts usually associated with precision watch manufacture which is capable of causing temperature drops of 135° F.," the company states.

Its name "Tornado in a Teapot" comes from the fact that it operates at speeds in excess of 100,000 r.p.m. Air velocities within the unit have been observed at the super-sonic speed of around 800 miles per hour.

These turbines have been designed in several sizes covering a range of airflow rates from 100 c.f.m. to 1,400 c.f.m. at sea level densities. The volume is greater at higher altitudes, the company states. In conjunction with their heat exchangers, the larger units are claimed to have a cooling capacity equivalent to melting 1,000 lbs. of ice per hour (12 tons of refrigeration).

The "work" which the air expansion turbine does to cool the air is performed by a fan mounted on the turbine shaft which pulls air through a primary heat exchanger. Power absorption of the fan exactly matches the power input of the turbine, it is said, and air velocities through the fan are between 300 and 400 miles per hour.

Six air turbine models are currently produced by AiResearch in both low and high pressure units weighing from 3 to 65 lbs. Operating speeds of these models range from 18,000 to 100,000 r.p.m., causing temperature drops of from 45° F. to 135° F.

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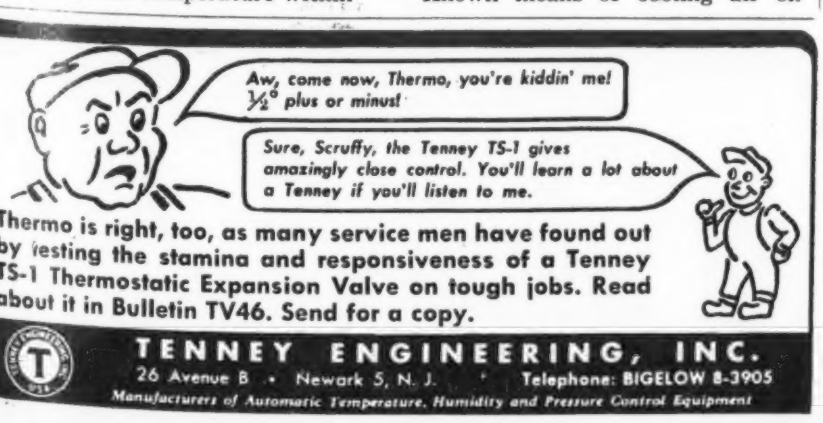
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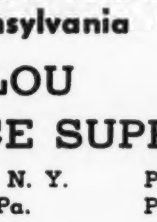

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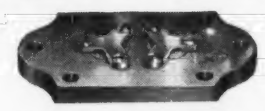

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- 1 7½ H.P., 230 V., D.C., centrifugal Gould.
- 1 2 H.P., 230 V., D.C., centrifugal water pump.
- 1 15 H.P., 440 V., 3 phase, A.C. motor condensing pump 300 GPM, 130' head.
- 1 50 can ice brine tank.
- 1 10 HP., 230 V., D.C., Brine pump centrifugal.
- 1 5 H.P., 230 V., D.C., condensing pump 90 GPM, 70' head centrifugal.
- 1 3 H.P., 230 V., D.C., Condensing pump centrifugal.

Allied Refrigeration Corp.
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Cleveland, Ohio
Telephone EN. 7171

Preston-Sanford to Make Pulleys & Flywheels

DETROIT — Preston-Sanford, Inc., has recently been organized here to manufacture pulleys and flywheels for the refrigeration and air conditioning industry, announces M. A. Preston, president.

Mr. Preston, formerly administrative executive and director of sales of Swift Mfg. Co. of Detroit, has formed this corporation with Charles E. Sanford, who for several years has operated the Sanford Pattern Works here.

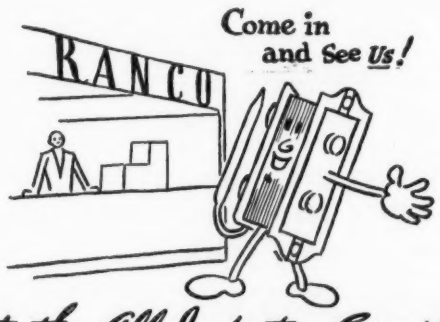
Preston-Sanford, Inc., is now in production on V-groove pulleys, 1 and 2 grooves from 2 to 7 in., and flywheels up to 18 in., the company announces.

Fedders-Quigan Reports $300,000 Quarterly Net Despite Shortages

BUFFALO—Despite the fact that shortages of raw materials are keeping operations to 50% of capacity, Fedders-Quigan Corp., manufacturer of unit coolers and condensers, showed an estimated profit of $300,000 for the quarter ending Sept. 30, 1946, according to a statement of Frank J. Quigan, who is board chairman.

This figure compares with the $27,800 earned in the like period of 1945, he said.

Sales for this year's quarters are estimated at $3,300,000 as compared to $1,400,000 in the same quarter last year, he added.



at the All-Industry Exposition in Cleveland

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Extended Surface
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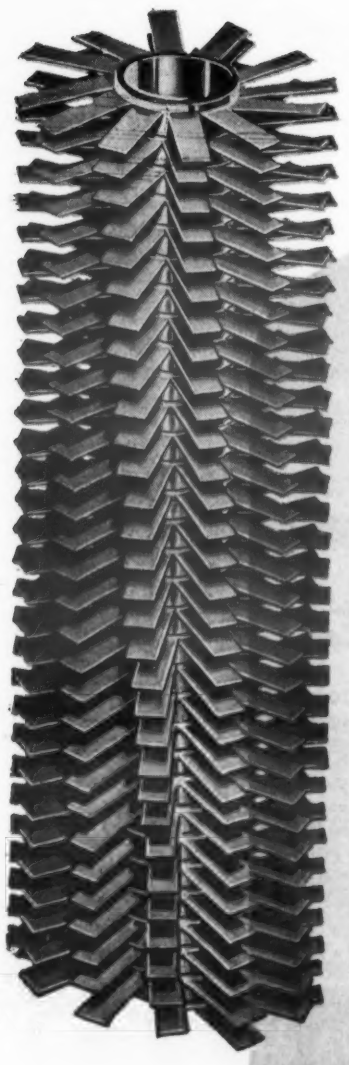

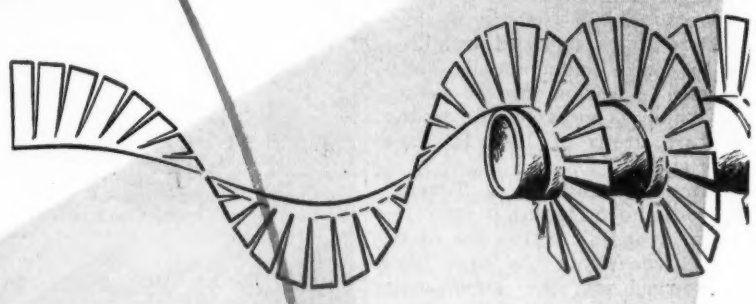

A unique advantage of Tilco Fin designing and production technique is the great flexibility made possible without any need for special dies. For instance, fins may be wound from 3 rows per inch up to 8 rows per inch, and this may be done on tubes from ⅜" to 1¼" in diameter, with fins of any height, starting with ¼".

If you have a problem requiring finned tubing we will be glad to work with you. We manufacture only finned tubing in straight lengths and our only interest is to efficiently serve those who use such tubing. We'll gladly send a Tilco Fin descriptive folder or specific information, without obligating you in any way.

EXTENDED SURFACE
DIVISION OF DAVID E. KENNEDY, INC.
68 Second Avenue, Brooklyn 15, N.Y.

Servicing Truck Refrigeration Units

Editor's Note: Truck refrigeration is of growing importance in the food transportation field, particularly in view of the tremendous gains in frozen foods. As an aid to the service man in handling these problems the NEWS is publishing this series of articles. This data covers the reverse-cycle Trail-Aire truck unit made by Advance Mfg., Inc., with whose permission these articles are appearing. They were prepared with the assistance of Henry O. Kirkpatrick, chief engineer for Advance.

Instalment No. 2

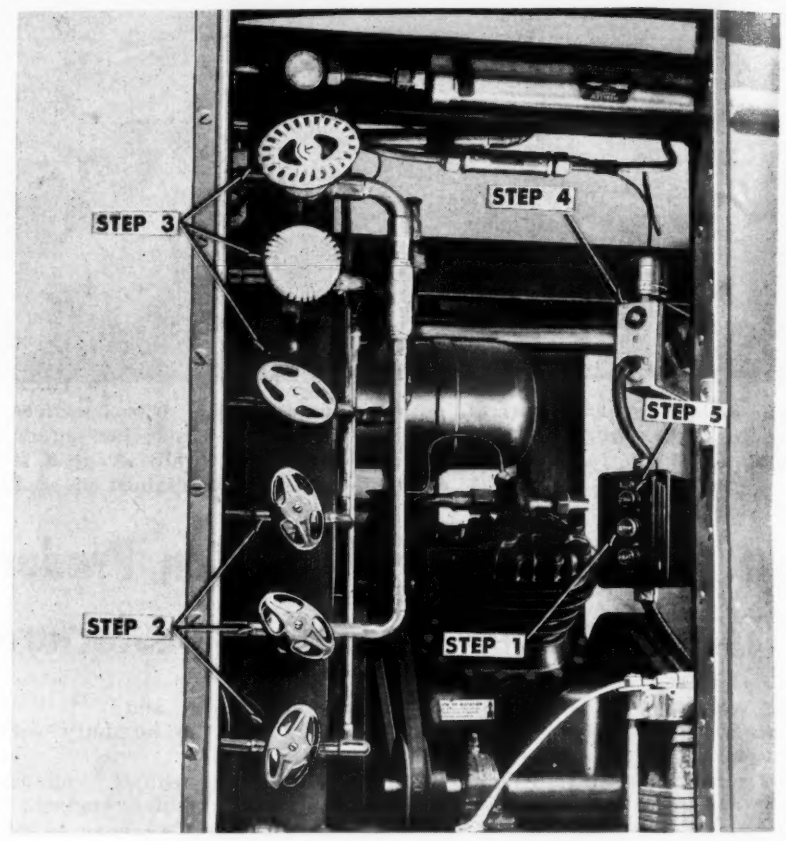

Fig. 3—The five steps necessary to operate the Trail-Aire truck unit on the cooling cycle, as outlined in the text, are illustrated above.

* * *

The heat exchanger is located next to the upper coil. It removes some of the excess heat from the liquid refrigerant before it passes through the expansion valve into the evaporator (upper coil).

The dehydrator is located above the hand control valves. This absorbs any moisture that may be present in the refrigerant.

A liquid strainer is located above the hand control valves. It serves to remove any foreign matter that may be present in the refrigerant.

The engine cooling fan and the lower coil fan draws air through the large intake on the right side of the trailer above the condensing coil. The screen must be kept free of paper, leaves, and other debris because the efficiency of the unit is based upon the amount of air passing over the lower coil. The lower coil fan draws air from this intake through the coil and exhausts it to the atmosphere through an outlet in the trailer floor.

The engine cooling fan draws air from this intake across the top of the lower coil and through the cooling fins of the air-cooled gasoline engine which drives the refrigerating unit. The screen on the front of the engine cooling fan must likewise be kept free of all debris because the operation of the engine depends upon adequate cooling. This cooling air is then exhausted on the left side of the trailer with the engine exhaust.

Air for the engine carburetor is drawn from the air circulating through the conditioner compartment. The engine exhaust is piped through two mufflers and then to the outside. The mufflers are located in the duct that carries the engine cooling air to the outside atmosphere.

How to Cool

Five simple steps are required to set this reverse-cycle unit on the cooling cycle. (The manufacturer of this particular compressor recommends that the operator always add a few drops of oil to the shaft seal of the compressor if the unit has been idle for any length of time.) Listed in the order in which they should be performed, the steps are:

1. Press "Stop" button.
2. Make sure that all three bottom valves (painted red) are completely closed. Turn clockwise to close.
3. Open all three top valves (painted white). Valves are turned counter-clockwise to open.

(Continued on next page)

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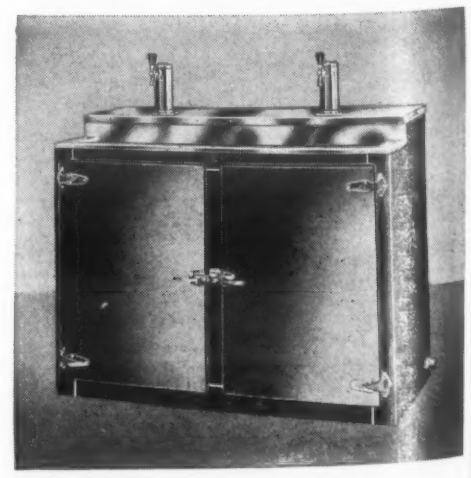

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Servicing Truck Units (Cont.)

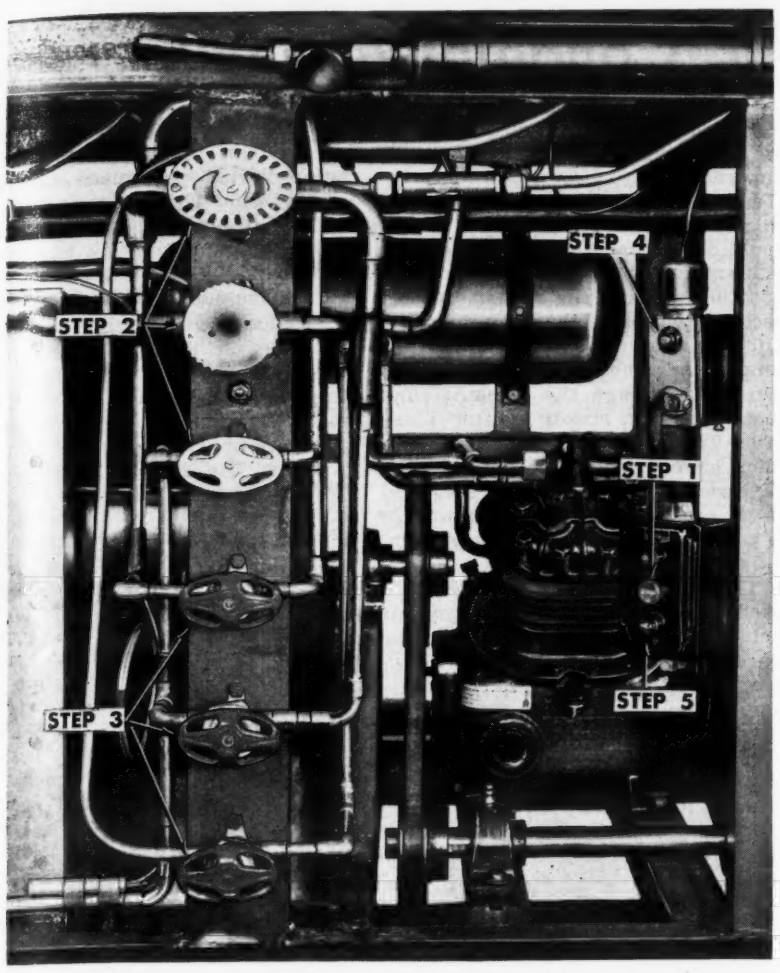

Fig. 4—Five steps are necessary to change the Trail-Aire unit from the cooling cycle to the heating cycle, which is accomplished by reversing the flow of the refrigerant.

* * *

4. Set thermostat knob pointer to the desired temperature.

5. Press "Cool" button on the control switch.

When the control switch button marked "Cool" is pressed, it actuates a relay in the engine control box. This starts the gas engine. The desired temperature as set on the thermostat is now automatically controlled. When the trailer temperature is lowered to this setting, the engine will stop, and after the trailer temperature rises a few degrees, the engine will automatically start and again lower the trailer temperature.

If, in cooling, the inside temperature is lower than the setting on the thermostat, the engine will not start. This is because the maximum temperature has not been reached. The engine, however, is ready to start and will start automatically when the temperature inside the trailer rises a few degrees above the thermostat setting.

How to Heat

The heating cycle is set in operation by performing the following steps in the order indicated:

1. Press "Stop" button.
2. Close the top three valves (painted white) by turning clockwise as far as they will go.
3. Open the three bottom valves (painted red) by turning counter-clockwise.
4. Set the thermostat knob pointed to the desired trailer temperature.
5. Press "Heat" button on the control switch.

(To Be Continued)

Rempe Catalog Gives Data on Coils, Units

CHICAGO—Complete refrigeration data and engineering information on Rempe fin coils and custom-built air conditioning units for low temperature cooling are contained in Catalog No. 120 just published by Rempe Co. here.

The company believes the book valuable to refrigeration engineers as an aid in selecting proper coils and for installing walk-in coolers, display cases, florist boxes, and air conditioning units.

The illustrated catalog contains information as to length of case, fin space, number of coils required, overall dimensions, surface in sq. ft., B.t.u. capacity per hour per degree, shipping weights, and prices.

Christine Joins Rosen Firm

PHILADELPHIA — William Anthony Christine, Jr., has been appointed to the building department of Raymond Rosen & Co., Kelvinator distributor here, it was announced.

After attending Drexel Institute of Technology, Mr. Christine joined the Navy Air Corps, following which he made a goodwill tour through South America.

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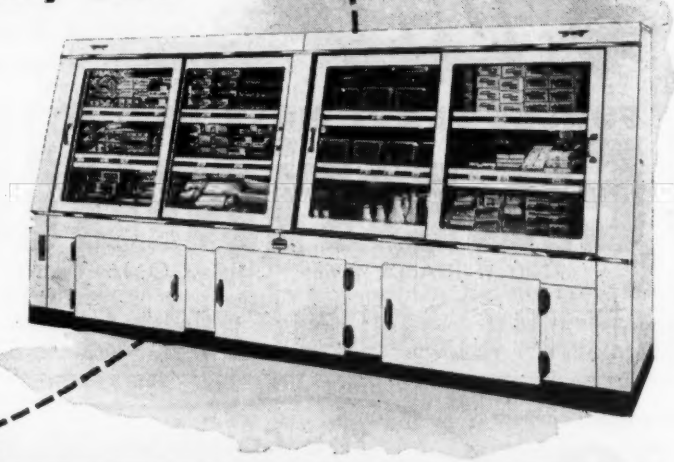

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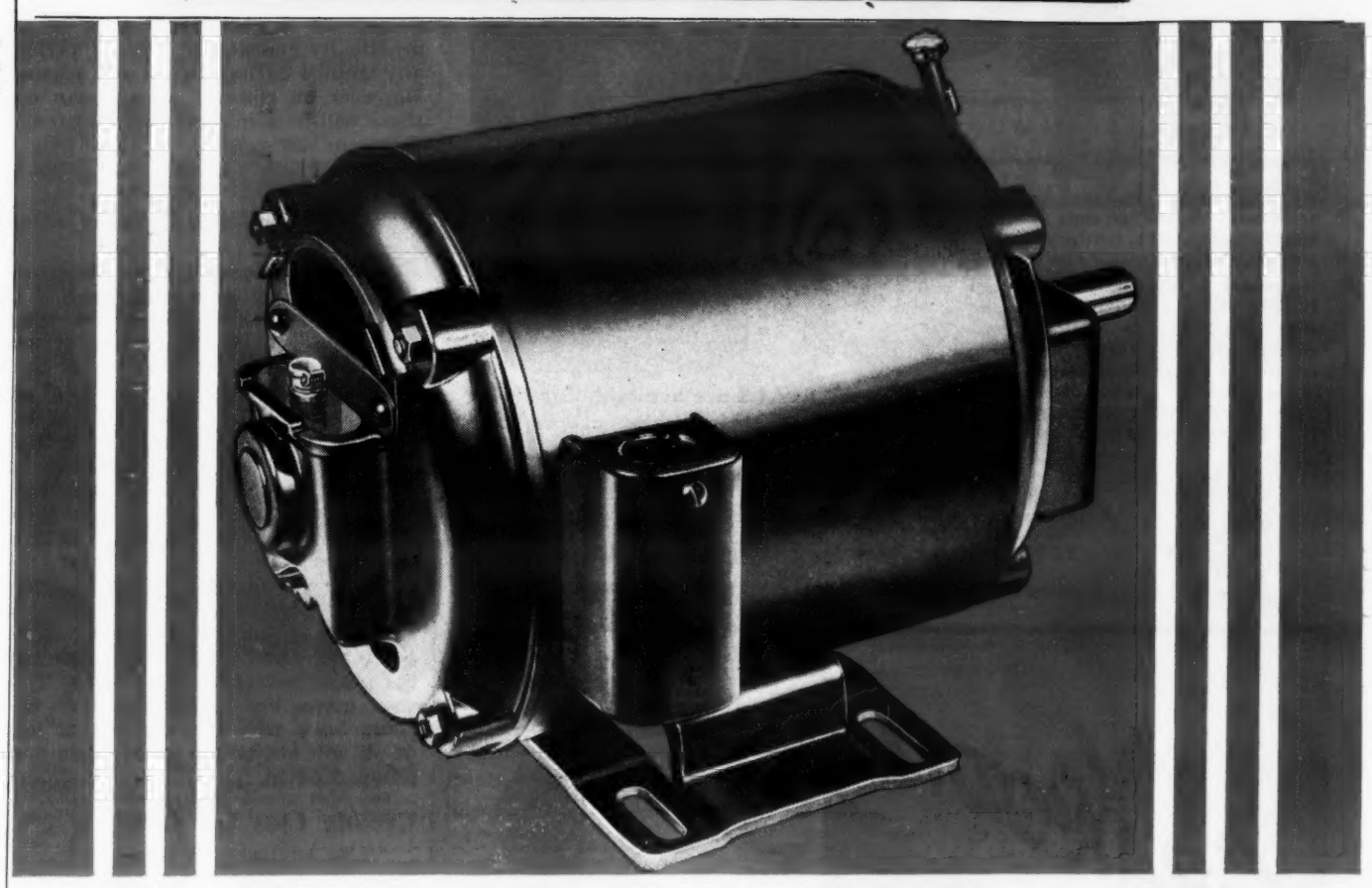

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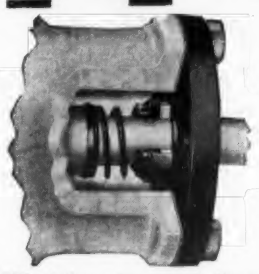

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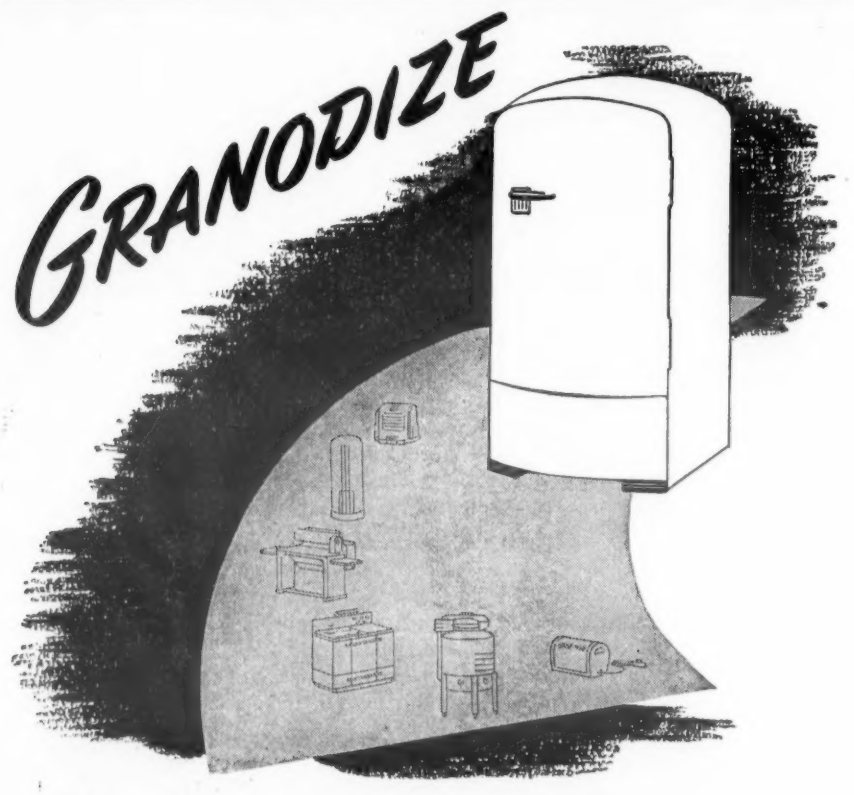

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By Following Schedule, Service Man Can Make Proper Air Conditioning Shut-Downs

Part 1: The Pump-Down

CHICAGO—The refrigeration service man who shuts down air conditioning systems in the fall (and that can be a profitable business) should work out a schedule so that he can service all his systems in the proper sequence at the right time, points out M. B. Goddard of Carrier Corp., who addressed the recent annual convention of the Illinois Refrigeration Service Engineers Society here.

"If you were to attempt to clean up one job at a time, you would not get around to shutting down the last one before it was time to start it up again," he declared. "Therefore, all critical items such as pump-down and freeze-up protection should be taken care of on all jobs as promptly as possible.

Critical Items Come First

"Next in order of importance is the determination of what parts may have to be ordered so that they will be on hand when needed. The non-critical items can then be taken care of at your convenience."

The refrigeration service man can add to his income by the winter shut-down and spring start-up plus a regular inspection service of air conditioning systems, but he must be careful not to "over-sell" these services, warns Mr. Goddard.

"It is only natural that if the customer's plant is receiving all the careful attention that I have suggested, he might expect that he is practically guaranteed against having any trouble during the cooling season. However, in spite of all you can do, there will be some unavoidable breakdowns or difficulties.

Danger In 'Over-selling'

"It is just as well, therefore, to be a little cautious about over-selling the advantages of winter overhauling or summer inspection service, because if you do get a bad break it is helpful if the customer understands in advance that it cannot be helped."

In shutting down a summer air conditioning plant, a fundamental objective is the prevention of refrigerant loss, which is accomplished by pumping the refrigerant into the condenser or receiver, Mr. Goddard reminded the R.S.E.S. members.

"Before this is done, however, the plant should be operated for a while so that performance of all the various components of the system can be observed and notes made of any defects or necessary corrections. This also gives an opportunity for the compressor to warm up so that loss of oil will not be too great when it is pumped down.

Cycling Cuts Oil Loss

"It is advisable to cycle the compressor a number of times in pumping down to minimize loss of oil and also to avoid carrying the process too far," he continued. "A slight positive pressure should be left in the system to prevent entrance of air or moisture through possible leaks."

The importance of making sure that stop valves on the condenser or receiver close tightly to keep refrigerant from seeping back into the system was emphasized by Mr. Goddard, who also advised tightening packing glands, if any, in the stop valves, and tightening seal caps, replacing seal cap gaskets if they're missing or damaged.

"An important precaution in pumping down is to make sure that the condenser or receiver has adequate capacity to store the charge. Such vessels should not be filled to more than 80% of their net volume. There have been a number of instances where they were completely filled with liquid and valved off and have later burst due to the hydraulic pressure resulting from an increase in temperature."

During the running period before the pump-down the service man should determine what repairs or adjustments will be necessary for valves and other parts of the system, paying special attention to the compressor.

If the compressor knocks during pump-down, the bearings may be loose, even though the machine runs quietly under a steady suction pressure. This may occur in those units which have a restriction between the crankcase and the suction manifold which creates a higher pressure in the crankcase during pump-down, said Mr. Goddard.

"This pressure difference creates a reversal of forces on the piston for each revolution and any slack in the bearings results in a knock. However, not all knocks are due to bearings. They may result from oil or liquid slugging or from a loose flywheel. Pulsations in the hot gas line may also cause a sound which is almost identical with a bearing knock, and is quite likely to occur if the condenser is any appreciable distance away.

"There is an easy way to determine whether a knock is caused by hot gas pulsation," explained Mr. Goddard. "If, with the compressor running, the discharge stop valve is throttled to create about a 15 lb. pressure drop and this causes the knock to fade away, it can be concluded that gas pulsation is the cause."

Broken or leaking compressor valves can be determined during pump-down. Irregular or uneven compression sounds, jumping of the high and low side gauges, and inability to pump to a low enough pressure would indicate that the suction valves are not in good condition.

Discharge valves can be checked by shutting off the compressor, closing the discharge stop valve, and observing the pressure in the cylinder head, said Mr. Goddard. A slow drop in pressure is permissible, but if it drops too fast, the discharge valves should be ground in or replaced.

Checking for Leaks

"The entire system should be checked over for leaks prior to or during pump-down. This inspection should include not only a torch test but also a visual examination for oil smears or seepage. In this connection, I would like to emphasize the importance of cleanliness in service operations. A certain amount of oil can be expected to spill around at times, but this oil should be carefully wiped up before you leave the job. Otherwise, you cannot be sure whether the presence of oil is a result of spilling or an indication of leakage.

"After pump-down the compressor belts should be loosened or removed so they will not take a set or develop flat spots," said Mr. Goddard. "Any oil or grease on them should be wiped off with a rag soaked in gasoline or carbon tetrachloride."

(To be concluded in next issue)

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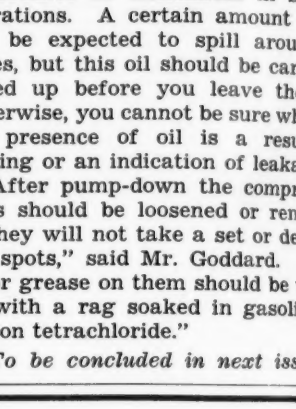

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Growth of Schools, Industry In South Offers Wide Market for Air Conditioning

(Concluded from Page 1, Column 4)

invention of the cotton gin," emphasized Mr. Henderson.

"It means that instead of being retarded industrially by climatic conditions, where in fact the heat has been a disadvantage for a matter of only a few months in the year, the South is suddenly placed in a position of full equality or advantage from a climatic standpoint. . . . Factory working conditions in the South are brought at least to a level of those in the industrial centers in the North.

"It was demonstrated during wartime manufacture that under controlled temperature and humidity conditions in the plants, southern industry could readily compete in output and the quality of the goods with the industry of the North," said Mr. Henderson.

Historical Milestone

"We can look ahead to the development of southern manufacturing in the next decade as one of the outstanding chapters in the whole history of American and perhaps of world industry. The North should benefit from this transition also, because southern purchasing power will be materially increased. The economic advancement of one section should mean the opportunity for greater productivity and improved standards of living for the whole country.

"It is to be remembered in this connection that the uses for air conditioning and refrigerating machinery by other industries were extended rapidly under the impetus of war. Perhaps the larger number of earlier installations of this equipment involved improvements in existing buildings and factories.

"But during the war, and especially in the large war plants built in the South, many large scale installations of air conditioning and refrigerating machinery were made as integral parts of the factory buildings at the time of their construction. Large, modern manufacturing plants were built and furnished in the most efficient methods.

"This gave a picture of the uses of our industry's products much more clearly than was possible in most of the prewar plants, where the incorporation of new methods was brought about by plant alterations and modifications, and where most of the old type of building design had to be retained.

"One misconception about air conditioning has been that it involved an expense that was altogether additional, and substantial in amount," said Mr. Henderson. "For example, most office buildings have been planned in such a way as to give the maximum number of outside and corner rooms. Ventilation has been a prime consideration.

"With air conditioning there is little premium on corner rooms and outside area space. Air circulation is well cared for. This makes it possible to build in the form of an unbroken rectangle, saving much wall space and bringing down costs, as well as conserving ground space," he emphasized.

Simpler Building Design

"One new hospital, capitalizing on this simplification of design, has reported that the construction costs including air conditioning would be actually lower than those of hospitals with the same number of beds, which had been built along conventional lines.

"Experiences with the modern factories constructed during the war, and especially those in the South, which were less often conversions of older plants, point to the fact that where air conditioning is installed as an integral part of a building at the time of its construction, there is a possibility that it will offer little added expense, and in any event, important compensating savings. . . .

"New plants are going up in the South having two-way temperature control for the comfort of employes and for the processing needs of many products. Here air conditioning and refrigeration are not conveniences by which certain jobs and processes merely can be carried on more comfortably, but are basic parts of the modern factory where top efficiency and top performance are necessary to survival."

Mr. Henderson sees broadening markets for refrigeration applications other than air conditioning in the South, but he does point out the possibilities in the air conditioning of schools. Pointing out the great strides made in education in the South during recent years, he comments:

"Unquestionably, one of the largest single obstacles to greater educational advancement in the deep South lies in the physical conditions under which the faculty and pupils must work. Already school boards and parochial schools are laying plans for air conditioned buildings, and it now seems extremely likely that the first completely air conditioned schools will be in the South, on the theory that the study conditions of future citizens are of at least equal importance with the working conditions in industrial plants.

Air Conditioned Schools?

"We all know, of course, that there is no royal road to learning. But keeping in mind what is happening right now in industry, it is safe to predict that the air conditioned school will become a commonplace in the South. Better school room conditions will naturally lead to higher scholastic standards, and we can forecast freely that in the air conditioned school, the attendance records will make better reading. . . .

"Great advances have been made in teaching techniques and the physical conditions of the schoolroom. The foremost educators of the country have labored diligently on visual teaching methods and simplified presentations. Modern schools have more comfortable chairs, better desks, adequate lighting.

"But the problems of better conditioning of the air—or controlling humidity and giving air cleanness and circulation—are only now the subject of study and correction.

"The immediate importance of this from the standpoint of the air conditioning industry," said Mr. Henderson, "is that a great many schools will be built in a relatively short time, or as soon as the more immediate demands for housing are met. These schools must be planned and appropriations for their construction must be made. It will be a great advantage and, in the end, a distinct economy, if provision for air conditioning is incorporated as an integral part of the building design.

"Therefore the industry should do all it can with appropriateness to bring this question fully to the attention of educators in the South in order that they may make their own investigations and determine for themselves the contributions which air conditioning is in a position to make to the educational advancement of this section of the United States."

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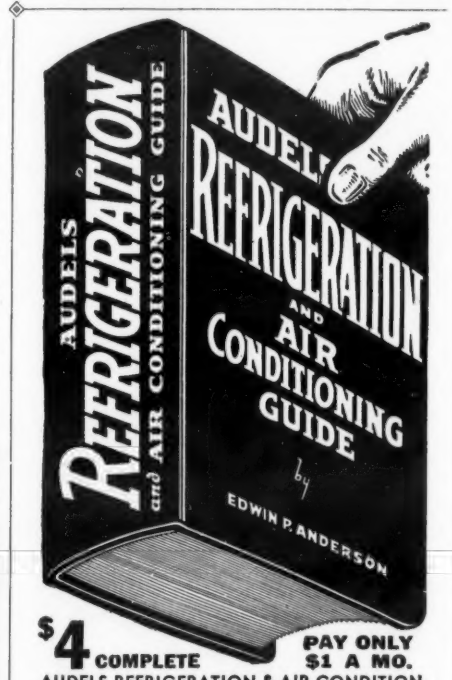

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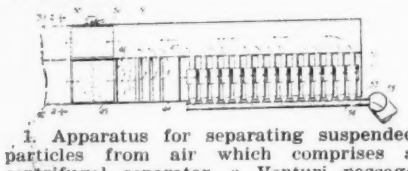
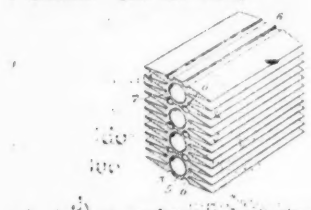
2,405,624. APPARATUS FOR CLEANING AIR. John E. Watson and Louis C. Whiton, Westport, Conn., and Charles B. McBride, Port Chester, N. Y., assignors to Prat-Daniel Corp., Port Chester, N. Y., a corporation of New York. Application April 9, 1943, Serial No. 482,470. 5 Claims. (Cl. 183—34.)



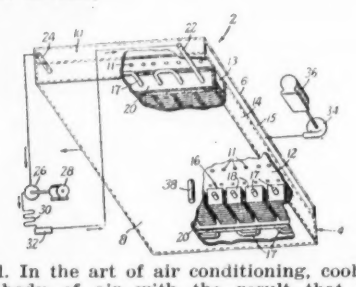
1. Apparatus for separating suspended particles from air which comprises a centrifugal separator, a Venturi passage comprising a throat and an expanding passage leading from said throat to said centrifugal separator and draw off passages from said expanding passage transverse to the direction of flow therethrough.

2,405,722. HEAT EXCHANGE STRUCTURE. Charles J. Villier, Louisville, Ky. Application Feb. 27, 1943, Serial No. 477,382. 7 Claims. (Cl. 257—137.)



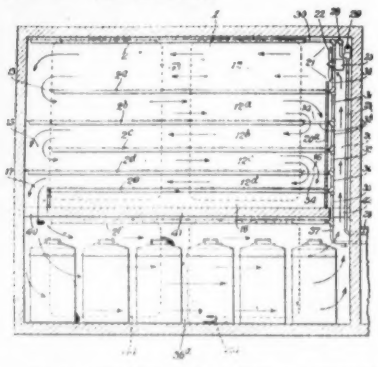
5. A heat exchange duct structure comprising an elongate tubular body for separating two fluids for exchange of heat between them; said body having two opposite unflanged surfaces complementary in contour, said unflanged surfaces being joined by two other surfaces at least one of which is provided with longitudinal flanges, each of said unflanged surfaces being provided with longitudinally extending grooves, the base of one of said flanges being disposed adjacent a groove in one of said unflanged surfaces there being a straight flat surface disposed between grooves in each of said unflanged surfaces.

2,405,812. AIR CONDITIONING. Thomas W. Binder, Maplewood, N. J. Application May 30, 1944, Serial No. 538,042. 15 Claims. (Cl. 62—129.)



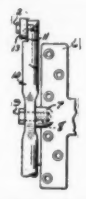
1. In the art of air conditioning, cooling a body of air with the result that the vapor therein is condensed and a low vapor-pressure zone is created, passing the air to be conditioned along a path adjacent said zone, and independently washing and cleaning the air before it passes said zone.

2,405,834. DEVICE FOR FREEZING FOODS. Herman W. Kleist, Chicago, Ill., assignor to Dole Refrigerating Co., Chicago, Ill., a corporation of Illinois. Application Dec. 29, 1941, Serial No. 424,741. 2 Claims. (Cl. 62—102.)



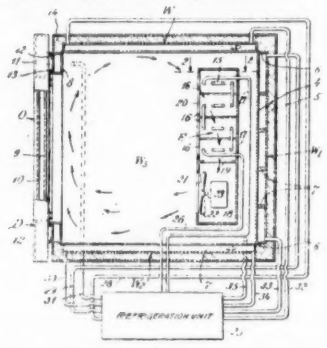
1. In a freezing and storage assembly for frozen foods and the like, a quick freezing compartment and means for quick freezing material inserted therein, including a plurality of vertically spaced generally horizontal cold plates arranged in staggered relation and adapted to form, with the walls of said compartment, a devious path for air, each said plate including upper and lower smooth surfaced metal sheets, whereby the passages defined between adjacent cold plates have smooth upper and lower walls, means for circulating a volatile refrigerant through said plates, and means, arranged to cooperate with said plates, for circulating air along the path defined by said plates, and an additional storage chamber having an air passage connection adapted to admit air from the quick freezing cabinet, and an air discharge connection adapted to return used air to the air circulating means.

2,405,887. REFRIGERATOR DOOR OPENER. Carl Hoffman, De Kalb, Ill. Application Sept. 5, 1944, Serial No. 552,789. 1 Claim. (Cl. 268—72.)



A door opening device, comprising a door frame and door, a plate mounted on the outer face of the door, a boss carried by the outer face of the plate and extending parallel with the face of the door beyond the edge thereof, a lever having a bolt passing loosely therethrough adjacent one end and screwed into said boss, a lateral pivot bolt carried by the inner end of the lever and parallel with the first mentioned bolt, and a roller carried by said bolt and having a rolling contact with a plate carried by the door frame.

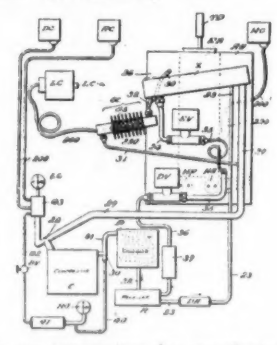
2,405,895. LOW-TEMPERATURE CHAMBER REFRIGERATION. Erwin Lodwig, Franklin Square, N. Y., assignor to Mobile Refrigeration, Inc., New York, N. Y., a corporation of New York. Application May 28, 1942, Serial No. 444,800. 6 Claims. (Cl. 62—102.)



1. In apparatus of the type described, in combination, a closed chamber having a window therein, at least two evaporators disposed at spaced points in said chamber and having surfaces exposed to the atmosphere therein, means for supplying refrigerant to said evaporators whereby their exposed surfaces are cooled, and means including an air propelling device for circulating some of the air within said chamber successively over said evaporators and said window and at a higher velocity over one of said evaporators than over the window and the other evaporator, whereby frost accumulations are removed from the window and from the evaporator over which the air is circulated at the higher velocity.

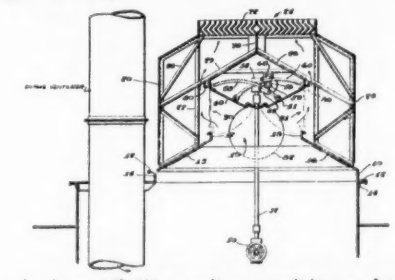
Week of Aug. 20

2,406,080. TESTING ASSEMBLY. James Madison Laird, Charleston, W. Va. Application July 18, 1942, Serial No. 451,509. 18 Claims. (Cl. 257—3.)



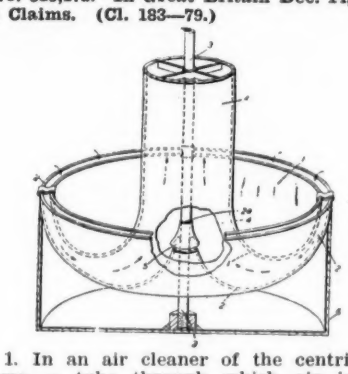
13. In an apparatus for producing in a chamber rapid transitions between selected temperatures, means for heating said chamber, a first means for cooling said chamber and including a refrigeration system, and a second cooling system for delivering a cooling liquid for heat exchange with said chamber independently of the operation of said first cooling means, said second cooling system including discharge means for freezing said cooling system of cooling liquid during times when the heating means or the first cooling means are in operation for establishing respectively high or low temperatures, whereby the second cooling system can be made effective for provoking a rapid transition from a high to a low temperature without load on the said refrigeration system and whereby the said second cooling system places essentially no load upon the heating means and first cooling means when either of the same is in service.

2,406,168. VENTILATING APPARATUS. Lucky J. Shumaker, Bellevue, Pa., assignor to H. H. Robertson Co., Pittsburgh, Pa., a corporation of Pennsylvania. Application May 5, 1943, Serial No. 485,719. 5 Claims. (Cl. 98—42.)



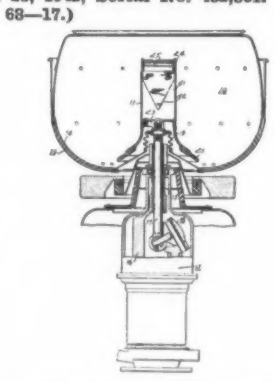
1. A ventilating unit comprising a base provided with an opening forming the ventilator throat, a ventilator cap supported a substantial distance above the ventilator throat providing lateral air exhaust openings between it and the ventilator base, said ventilator cap having side portions projecting outwardly beyond the opening of said ventilator throat, opposed dampers having one of their side edges pivotally mounted at the side edge portions of said cap and arranged to swing outwardly into a position to close said openings and inwardly until the opposite edges thereof are in substantially abutting position to form deflectors for the air emerging from said throat, said dampers extending upwardly and outwardly in opposite directions from their substantially abutting edges and operating to prevent entrapment of the outgoing air under the ventilator cap, and a suction band mounted upon the base and surrounding said cap and spaced a substantial distance therefrom to form an air passage communicating with said lateral air exhaust openings, said band extending above the cap and below said ventilator throat, and terminating at its upper end in an opening.

2,406,177. DUST REMOVER AND FILTER. Cecil Gordon Vokes and Edward Arthur Stokes, London, England; said Stokes assignor to Vokes Ltd., London, England. Application Dec. 21, 1943, Serial No. 515,172. In Great Britain Dec. 14, 1942. 3 Claims. (Cl. 183—79.)



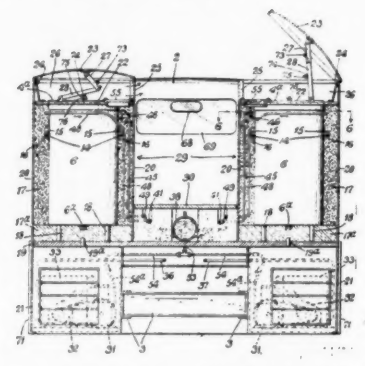
1. In an air cleaner of the centrifugal type, a tube through which air is exhausted upwardly, the lower end of said tube being flared back substantially 180 degrees, said flared portion beginning and terminating in a common plane normal to the axis of said tube, means forming a wall spaced along said axis from the flared end of said tube, said wall and flared end having their outer edges spaced and substantially concentric of said axis, said spacing gradually increasing toward said axis, said wall terminating inwardly in an aperture within said tube below said plane, a deflector cap positioned above said aperture and overlapping the periphery thereof, and a dust receptacle fitted to said wall and extending below said aperture.

2,406,198. DOMESTIC APPLIANCE. Kendall Clark, Oakwood, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Feb. 28, 1942, Serial No. 432,861. 5 Claims. (Cl. 68—17.)



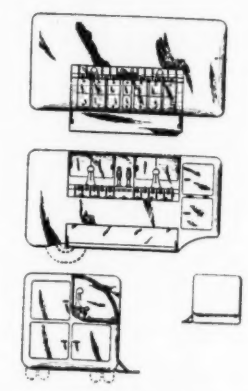
1. A washing apparatus comprising a tub adapted to contain washing liquid and articles to be washed, a vertically reciprocable shaft extending upwardly through the bottom of said tub, an agitator in said tub secured to said shaft, said agitator being outwardly flared at the bottom and having a detergent chamber in its upper part provided with a perforate wall at the bottom of said detergent chamber in open communication with said tub, and a removable cover in sealing engagement with the upper part of said agitator to permit insertion of detergent into said chamber while said agitator is in operative position in said tub.

2,406,241. REFRIGERATED TRUCK. Willard L. Morrison, Lake Forest, Ill. Application Dec. 15, 1941, Serial No. 423,024. 5 Claims. (Cl. 62—117.)



1. A refrigerated truck comprising a body formed of evaporators which act as containers into which the material to be cooled is received, said containers being formed into two sets separated by a non-refrigerated space in which individuals stand when inserting materials into or removing materials from said containers, and a heat interceptor located above each set of said containers and separated therefrom by a space, said space having a connection below said heat interceptors to the outside atmosphere through which air heated by the sun striking the heat interceptors escapes without heating the containers.

145,452. DESIGN FOR A PORTABLE SODA FOUNTAIN. Joseph R. Lewis, Burbank, Calif. Application Sept. 17, 1945, Serial No. 122,115. Term of patent 14 years. (Cl. D14—3.)



The ornamental design for a portable soda fountain, substantially as shown and described.

CLASSIFIED ADVERTISING

POSITIONS AVAILABLE

WANTED SERVICE ENGINEER for commercial refrigeration and air conditioning. Must be experienced. With or without automobile. Hourly rate plus commission, also profit-sharing arrangement. Please enclose photograph with first letter. REFRIGERATION MAINTENANCE CORP., 1127 Carnegie Ave., Cleveland 15, Ohio.

SAN DIEGO, California. Refrigeration Service Company requires first class service men at $1.50 per hour with time and half over 40 hours per week. Steady work, lots of overtime, and the best climate in America. BOX 2073, Air Conditioning & Refrigeration News.

WANTED PRODUCTION engineer superintendent for producing coolers and cases, must understand wood and metal construction, make drawings, train men, be experienced in all plant operations, have successful record, old firm centrally located. Give qualifications, etc. BOX 2086, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED 10—9 x 12' Navy surplus walk-in refrigerators, complete with Carrier 3 H.P. self contained units. Call or write ADVANCE REFRIGERATION CO., 8405 S. Aberdeen St., Chicago 20, Ill. Stewart 4524.

EQUIPMENT FOR SALE

IMMEDIATE DELIVERY 6 hole ice cream freezers, streamlined cabinet—stainless steel top. Sealed Hull $175. Stainless steel dairy case, 7, 8, 10 feet. ACCURATE METAL WORKS, 837 Tilden St., New York, N. Y., OL 5-6905.

SECTIONAL WOOD walk-in storage boxes, 4" fiber glass insulation, fir exterior, spruce interior, automatic locks, steel saddle step. Built to specified size. Seven day delivery, $1.27 per squart foot F.O.B. New York. All styles freezer cabinets, immediate delivery. LEONARD BERGMAN, 150-19 Liberty Ave., Jamaica, N. Y. Jamaica 6-1733.

GAS DRUM VALVES ¾" male taper pipe bottom connection ¾" male straight pipe outlet connection with seal cap ⅜" square valve stem. Approximately 8,000 of these used valves good condition for sale at $1.25 each in quantities of 500 or more. Samples available. CALIFORNIA REFRIGERATOR CO., 1077 Mission St., San Francisco, Calif.

FOR IMMEDIATE DELIVERY double duty stainless steel butcher, delicatessen and dairy display cases, 6'-8'-10' and 12' lengths complete with coils. Also 5 and 10 gallon electric water coolers. For Information Apply: COMMERCIAL REFRIGERATION SERVICE CO., 651 Atlantic Ave., Brooklyn, N. Y.

IMMEDIATE DELIVERY—new air conditioning equipment. Weathermakers complete with motor, "Freon" coil, expansion valve, drives, filters, etc. 2 ton up to 25 ton (1,000 to 12,000 CFM Capacity); centrifugal blowers, SWSI and DWDI and twin mounted, propeller fans, heating and cooling coils, evaporative condensers. CONTROLDTEMP EQUIPMENT SALES CO., 236 Butler St., Brooklyn 17, N. Y.

FOR SALE: 10,000 new aluminum ice cube trays in three popular sizes. Also air-cooled and water-cooled remanufactured condensing units ¼ up to 2 hp. Write for particulars. EDISON COOLING CORP., 310 E. 149th St., Bronx 51, N. Y.

IMMEDIATE DELIVERY 20 cu. ft. all-steel-glass top Freezers: upright glass top or open, with superstructure; Ice Cream, Frozen Food open and closed cabinets; Reach-ins, Wood and Metal Storage Boxes; all glass Sliding Door Dairy Refrigerators; Beverage Coolers; Air Conditioning Units; Motors 5-20 hp., etc. FRIGITEMP CORP., 931 Bergen St., Brooklyn 16, N. Y. Main 2-9093.

NATIONALLY KNOWN ice cream cabinets for immediate delivery—with or without machines. 4, 6 or 8 holes. Inquire FRIGITEMP CORP., 931 Bergen St., Brooklyn 16, N. Y.

LARGE SELECTION of used coils for walk-in coolers, all lengths and widths at very reasonable prices, any quantity. Immediate delivery, new sliding glass front dairy boxes, stainless steel front, aluminum lined, wooden and all steel. GORDON-PERITO CORP., 6024 Seventh Ave., Brooklyn, N. Y.

WALK-IN COOLERS—Fiberglas insulation, well-seasoned lumber. Immediate delivery on 6x8x9's. Prompt delivery on all other sizes. Send specifications for special-built coolers. Quotations promptly given. LAKE REFRIGERATOR CO., 1005 S. 5th St., Milwaukee 4, Wis.

COPPER WATER COILS suitable for forced air heating and cooling. 329 square feet surface. Flow 5 pounds pressure 200 usgpm. Created weight 220 pounds. Two, three, and four inch diameter alum flexible interlocking conduit. ALLEN W. LOETHER, 220 Madison Ave., Wichita 7, Kan.

COMPRESSOR AND PARTS rebuilding—Compressor, float valves, water valves, low pressure controls, evaporators, water cooled condensers, condensing units and many other items replaced from our large stocks, or repaired upon receipt of your defective material. Send for our catalog-prices listed. REFRIGERATION MAINTENANCE CORP., 321 E. Grand Ave., Chicago, Ill.

SECTIONAL STORAGE COOLERS Prompt delivery, from stock. 6x8x8' high and 8x10x8' high, 3⅝ inches fibre glass insulation, seasoned lumber. Special sizes built to order. Send me complete specifications for quotation. Prompt service given. M. E. ROBERTSON, Manufacturers Agent, 2913 Columbia Road, Madison 5, Wis.

SEALED CROSLEY TERMINALS. Installed from the outside in a few minutes without opening the compressor. Corrects leaky terminals on all Crosley "F-12" units. Set of three $6.75 (Part No. 1020). Installation tool $1.65. Immediate delivery. Money-back guarantee. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

FRIGIDAIRE METER-MISER Terminals. Installed from the inside. Fits compressors with bottom-mounted terminals. (Part No. 1060.) Set of three $2.85. WESTINGHOUSE TERMINALS. Installed from the inside. (Part No. 1030.) Set of three $2.85. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

NORGE CHECK VALVES. For open-type units. (Part No. 1040.) $2.55 each. SEALED NORGE terminal, packing washers. For repairing leaky terminals. Installed from the outside in a few minutes. (Part No. 1050.) Three sets (9 washers) $1.00. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

COLDSPOT AND BOHM check valve sets. Same as original equipment. Easy to install. Will fit all Coldspot and Bohm open type units. No grinding of the seat necessary. New seat included. Set consists of six parts, $2.50 per set, precision made. SPINELLO ENGINE CO., 99 Woodland Ave., Kearny, N. J.

FRANCHISES WANTED

NEVADA WHOLESALER with a large number of accounts, desires added lines of representation in Refrigeration parts, units and supplies. Interested in both Ammonia and Low-Pressure valves, controls, fittings, etc. Write BOX 2068, Air Conditioning & Refrigeration News.

ADDITIONAL LINES desired by manufacturers' representative and engineer. 15 years experience in air conditioning and refrigeration design, engineering, sales. Calling on wholesalers, manufacturers, contractors in New England and eastern New York. Interested in freezer plates, controls, heat exchangers, self-contained air conditioning units, cases, condensing units. BOX 2082, Air Conditioning & Refrigeration News.

WANTED BY a reliable dealer distributorship or dealer's franchise of a national line for line of meat cases, coolers, and freezers beginning Jan. 1, 1947. Pittsburgh, Allegheny County, and surroundings. BOX 2089, Air Conditioning & Refrigeration News.

BUSINESS OPPORTUNITIES

SUCCESSFUL REFRIGERATION manufacturer sell half interest in plant going full capacity. Investor must have manufacturing experience. $90,000 required. Write M. LANDMAN, 115 South Los Angeles St., Los Angeles 12, Calif.

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Box 2081, Air Conditioning & Refrigeration News

What's New

Allen-Bradley Develops New Type Universal Relay

MILWAUKEE—A new line of universal type solenoid relays, an addition to the regular Bulletin 700 line of solenoid relays, has been developed by the Allen-Bradley Co. here.

With these universal relays, a simple shift of connections makes it possible to change a set of normally open contacts to normally closed operation, or vice versa, the manufacturer declares. Thus, it is said, the equipment designer can provide for future changes with a minimum number of components.

Bulletin 700 Universal Solenoid relays are manufactured in 2, 4, 6, and 8 pole construction. All the contacts on the 2 pole and 4 pole relays are of the universal type. The 6 and 8 pole relays have only four sets of universal contacts, the company says. The remaining contacts are of the conventional, normally open or normally closed type which cannot be changed in the field.

These relays have a maximum current rating of 10 amperes, noninductive. The universal type can be used for switching circuits of like polarity, but not for reversing switches.

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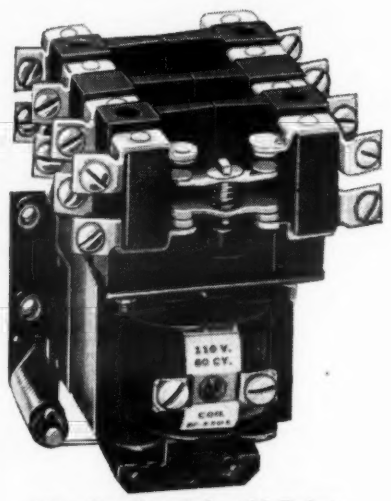
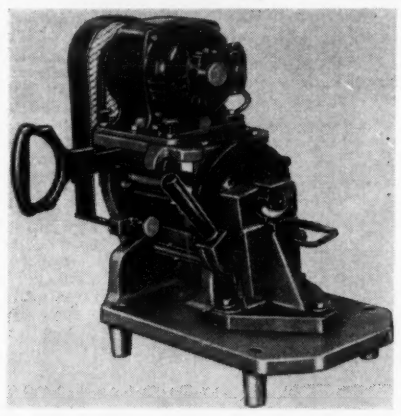


Allen-Bradley Solenoid Relay



Electrical Device Cuts, Flares, and Trims Tubing

DAYTON, Ohio—Designed to cut, flare, and trim copper or aluminum tubing in one operation, an electric tube cutting and flaring machine has been introduced by the C. J. Unger Mfg. Co. here.

Similar machines made on special order have been used by manufacturers for several years, but this is the first machine to be produced in quantity, the company claims.

It is powered by a ⅓-hp. motor and has a capacity of more than 5,000 flares in eight hours, it is said. The tubing does not revolve, permitting any length of tubing to be handled. Removable jaws for various sizes of tubing are available.

Flares are spun and trimmed to a perfect fit, thus avoiding leaks caused by crystallization of the metal, the company claims.

Stangard-Dickerson Publishes New Booklet on Cold Plates

NEWARK, N. J.—A new postwar plate catalog containing valuable technical information regarding modern methods of refrigeration has been published by The Stangard-Dickerson Corp., reports Victor J. Moss, director of sales of the corporation.

It is entitled, "The A.B.C. of Stangard Prime Surface Cold Plates."

Dr. Schlumbohm Introduces Fahrenheitor 'Tubadipdrip'

NEW YORK CITY—A new coffee maker which does not require the use of boiling water and thereby purportedly produces a drink free of fats released by percolators and vacuum types was introduced recently by Dr. Peter Schlumbohm, manufacturer.

Called the Fahrenheitor "Tubadipdrip," the coffee maker consists of three seamless, glass-plated aluminum parts: an outer tube or container, an 11-in. inner tube with sieve, and a funnel.

To make six cups, the following directions are given:

"Fill the container nearly to the beginning of the flared section with hot water.

"Use the funnel as a measure for the coffee, by placing a slip of paper between the funnel and tube. Pierce the paper bottom and let the coffee fall into the tube.

"Let the tube sink under its own weight into the hot water. Stir coffee in the tube with a long spoon vigorously for half a minute. Repeat stirring after one minute.

"After two-thirds of a minute dip, lift the tube, slip the funnel into position and rest the tube on the funnel for dripping-off."

Water for the container should be heated to about 185° F., Dr. Schlumbohm recommends. This temperature is reached when the kettle starts "singing."

Boiling water is bad for making coffee, he says, because it releases disagreeable fats. He claims percolators and vacuum coffee makers are "steam engines" in that they require water of or near 212° F.

Tubadipdrip was designed for use of the coarse, steelcut grind only. This, it is claimed, is the better of the two grinds because it has been least deflavored by air, is least affected by the grinding heat, and "safeguards against overextraction of tannic components, while offering to the water sufficient access to the aromatic oils and caffeine."

It is suggested that soap and a bottle brush be used to clean all metal parts.

The Tubadipdrip can be used also to make tea or mix drinks. If employed as the former, tea leaves are put in the tube, which is then moved up and down several times. Steeping time is given as one and a half minutes.

Fill the tube with ice, Dr. Schlumbohm says, "and you have a new aerator and a new method for improving the taste of iced drinks."

The item is produced both with and without a cork handle. If the Tubadipdrip is purchased without a handle, it is recommended that a napkin be tied around the neck of the container.

There is no pouring lip because, according to the manufacturer, the straight edge is superior to a lip.

Fahrenheitor 'Tubadipdrip'

27 Food Service Boards Turned Out at Leitner

CHICAGO—Twenty-seven different workboards, having either stainless steel or baked enameled steel fronts, are now being manufactured by the Leitner Equipment Co., supplier of food service equipment for restaurants and taverns.

Bottle rack linings are constructed of galvanized sheet steel, which, if desired, can be lined with stainless steel, according to the company.

Tops, sinks, and splash backs are of polished stainless steel, 18-8 analysis, the company said.

Prices on the workboards range from $70.96 for a cocktail unit to $283.10 for a workboard containing three sinks, two drains, and a cocktail unit.

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IMMEDIATE DELIVERY ON ALL ITEMS
GENERAL REFRIGERATORS CORP.
678 Broadway, N. Y., 12, N. Y., ST 9-1222

Hey, Thermo, what's this tale about a tail you started to tell me?
There isn't space enough here to tell you, but if you can read, look this over.
In the Bulletin you'll find a lot of facts that will astound you as they have many others—until they put a Tenney TS-1 in the line and proved every one true. Try a Tenney TS-1 and you'll use more of them. Send for Bulletin TV46.
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Manufacturers of Automatic Temperature, Humidity and Pressure Control Equipment

A MASTERPIECE in Thirst-quenching Convenience
OASIS ELECTRIC WATER COOLERS
You're always Sure with an Oasis-built by Ebco, pioneers in the electric water cooler field.
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10 DAY SERVICE
Factory Rebuilt Units $39.95
(ALL MODELS EXCEPT "C")
● Genuine Grunow Parts.
● Guaranteed 6 months.
● Just unfasten bolts holding board and ship complete.
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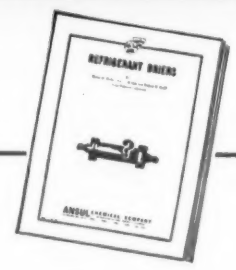
A TINY DROP OF WATER
REFRIGERATION'S BIGGEST PROBLEM!

DRYING POWER OF VARIOUS MATERIALS

Drier	Refrigerant	Liquid or Vapor	Max. Residual Water Concentration After Passage through Drier. .25% Initial Water Concentration	.02% Initial Water Concentration
ACTIVATED ALUMINA	Sulfur Dioxide	L	.15	.005
		V	.01	
	Methyl Chloride	L	.02	.006
		V	.01	
SILICA GEL	Sulfur Dioxide	L	.15	.006
		V	.01	
	Methyl Chloride	L	.01	.004
		V	.01	
DRIERITE (Calcium Sulphate)	Sulfur Dioxide	L	.15	.009
		V	.08	
	Methyl Chloride	L	.05	.003
		V	.04	
CALCIUM CHLORIDE $CaCl_2$	Sulfur Dioxide	L	.09	.013
		V	.03	
	Methyl Chloride	L	.10	.005
		V	.04	
CALCIUM OXIDE CaO	Sulfur Dioxide	L	.20	——
		V	.15	
	Methyl Chloride	L	.15	——
		V	.08	
BARIUM OXIDE BaO	Sulfur Dioxide	L	.20	.017
		V	.15	
	Methyl Chloride	L	.05	.006
		V	.05	

IMPORTANT QUESTIONS IN SELECTING A DRIER
1. Does the material dry the refrigerant below the corrosion limits when placed in the liquid line? In the suction (vapor) line?
2. Does the material dry the refrigerant below the limits for ice formation with methyl chloride and the "Freon" refrigerants?
3. Does the material accomplish the drying in one passage of the refrigerant, or is it slow, i.e., requires several passages?
4. Does the material deteriorate in physical character in handling or when it removes water from the refrigerant?
5. Does the oil affect the drier adversely?
6. Does the drier corrode?



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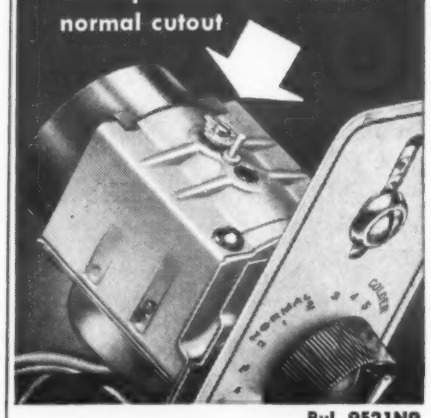
An informative reprint, "REFRIGERANT DRIERS," will be sent on request. No obligation. Send for it today.
ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.
LIQUID Sulfur Dioxide or ANSUL* LIQUID Methyl Chloride or ANSUL*
*REG. U.S. PAT. OFF.
ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE
ANSUL CHEMICAL COMPANY
REFRIGERATION DIVISION, MARINETTE, WISCONSIN
DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22" AND "FREON-113"

FILLING ALL NEEDS
The Cutler-Hammer Line of REFRIGERATION REPLACEMENT CONTROL
This One Universal unit alone covers 60% of all needs.

4 degree external differential adjustment either side of normal cutout


Bul. 9521N9
Adjustable Mounting Brackets
Maximum Mounting Centers.....4-3/16
Minimum Mounting Centers.....2-3/16
Adjustable Cutout Feature—Differential can be increased 4 degrees by turning indicator in "Hi" direction and decreased 4 degrees by turning in "Lo" direction.
Adjustable Range—Turning screw clockwise lowers settings and counter-clockwise raises settings.
Operating knob can be adjusted to meet various evaporator scale settings. New knob is ideal for varying shield thicknesses. Makes this control adaptable to wider range of single dial replacement jobs where overload is not required in unit.
Visit our booth No. 304-306, Refrigeration and Air Conditioning Exposition, Cleveland Public Auditorium, October 29-November 1
The Cutler-Hammer line of Refrigeration Replacement Control will meet all the refrigeration serviceman's requirements. One Cutler-Hammer Control Unit alone . . . the *Universal* Replacement unit . . . will handle 60% of his needs. And where exact replacement control is needed, that item also will be found in the C-H Exact Replacement Control line . . . individually packed, clearly labelled, complete with dial plate, mounting screws, trim washers and full instructions for mounting and adjustment.
Behind this line are 50 years of control specialization and thorough knowledge of merchandising requirements. Thus, the line is recommended by outstanding refrigeration wholesalers from coast to coast and alert service organizations everywhere use it to reduce investment in stock, to insure regular and rapid turnover, faster completion of the job, and greater all-round satisfaction. CUTLER-HAMMER, Inc., 1362 St. Paul Ave., Milwaukee 1, Wisconsin.
CUTLER-HAMMER MOTOR CONTROL C-H
DOMESTIC, SEMI-COMMERCIAL AND COMMERCIAL CONTROL

Promoted by Carrier

ARTHUR M. SHANKLIN

Vice president of Carrier Corp., he now is general sales manager also.

Ceiling Prices Upped On Molded Rubber Items

WASHINGTON, D. C.—Manufacturers' ceiling prices have been increased for a variety of rubber items principally used in the manufacture of automobiles, refrigerators, vacuum cleaners, and electrical appliances, the Office of Price Administration has announced.

The increases, effective Oct. 2, apply to molded, extruded, lathe-cut, and chemically blown sponge rubber products. They include such items as refrigerator door strips, bushings, grommets, washers, sponge tubing, bumper strips, wheels, wringer rolls, rings, and hard rubber battery covers, it is stated.

The price ceiling increases are 17% on approximately 80% of total production of these products, representing items that have price ceilings established by January, 1942, formula pricing methods and costs in effect at that time.

On the remaining 20% of production, for which increases already have been granted aggregating 15% over January, 1942 prices, a further increase of 2% is allowed, which will bring the total of the increase to 17 per cent.

Resellers of these products, including retailers, are allowed to recalculate their ceilings to give them their March 31, 1946, percentage margin over acquisition cost under the new order.

Decontrol Order--

(Concluded from Page 1, Column 2)

densers, including shell and tube condensers, unit coolers, and fan coils, when designed for cooling purposes only.

"4. Condensing units, over 1 hp. and up to, but not including, 25 hp.

"5. Cabinets of the following commercial types, when sold to commercial users: ice cream makers, ice cube makers, and frozen food display cases having visible tops or display signs.

"6. Evaporative condensers.

"7. Insulated cold storage doors.

"8. Refrigerated coolers, cases, and boxes, including but not limited to the following types: beverage, dairy, display, dough retarders, florist boxes, milk, mortuary, reach-in, salad, utility, vegetable and fruit, walk-in, wall cases, water.

"9. Counter and back bar refrigerators and display cases of all types.

"10. Refrigerator compressors, over 10 hp., or 10 tons, and up to, but not including, 25 hp. or 25 tons.

"11. Refrigerators over 16-cu. ft. capacity as follows: commercial, display, reach-in, walk-in.

"12. Miscellaneous commercial refrigeration equipment and accessories, including but not limited to the following: air conditioning or refrigeration equipment for automobiles, hoist cabs, trailers; air washers; back pressure switches; dryers, exchangers; filters; industrial coolers, such as tool and instrument coolers, cutting oil coolers, rivet coolers, etc.; injectors; receivers; relief valves; strainers; water regulator valves."

Frozen Food Expansion Cramps Freezer Space

WASHINGTON, D. C.—Rapid expansion of the frozen foods industry is largely responsible for the acute shortage of freezer space, say the U. S. Department of Agriculture and the Warehouse Industry Advisory Committee in urging operators of cold storage warehouses to use as much cooler space as possible for freezer space and to pile products in freezer space efficiently.

A new record on the total goods in freezers was established on Sept. 1 with the 1946 peak still about two months away, declares the Department of Agriculture, which estimates that frozen fruits and vegetables accounted for 42% by weight of commodities stored in freezers on Sept. 1.

Between 100 and 200 million pounds of frozen foods are expected to move into freezer storage between Aug. 1 and Nov. 1. Yet to come are frozen fruits, vegetables, and poultry.

To accommodate these large quantities of frozen food, cooler space will have to be operated as freezer space and more efficient use made of existing freezer space, warn warehousemen.

About 7 million cu. ft. of freezer space was being operated at 30° to 50° on Aug. 1, estimates the Warehouse Industry Advisory Committee. If converted for frozen food storage, this space would hold some 140 million pounds of frozen fruits and vegetables.

Warehousemen say that since the beginning of the war they have expanded freezer storage space as rapidly as refrigeration machinery could be produced.

FRIGITEMP WELDED ALL-ALUMINUM FREEZER

OPEN OR CLOSED

• It's New! It's Non-Corrosive! It's Strong (outside shell of 18 gauge hard alloyed aluminum). It's Beautiful! (lacquered aluminum finish). Can be used open or closed.

• CHECK THESE IMPORTANT FEATURES:

1—Indexed compartment enables purchaser to easily select the merchandise desired with no fumbling or hesitancy. Sales resistance cut to minimum.
2—Inside and outside shells are completely welded.
3—4" vapor sealed insulation (5" at the bottom) making heavy walls unnecessary, thus cutting down width of case—making it easier to go through opening.
4—7 refrigerated partitions give you 6 completely refrigerated compartments that operate efficiently, open or closed (AL-30).
5—2 extra large compartments are provided for bulkier packages, such as turkey, etc.
6—Extra large capacity of compartments makes constant servicing of cabinets unnecessary.
7—When operated closed, the double glazed doors slide easily with our "Easy-Slide" feature.
8—The merchandise shelf is an exclusive feature. An ideal way to show tie-in articles. Marvelous for displays.
9—"Staged Merchandising"—the superstructure is framed and lighted for the greatest possible attention value.
10—In addition to slide channels, there are 15 sq. ft. of display area for frosted food promotion.
11—Another exclusive FRIGITEMP feature—when desiring to operate open instead of closed, just place glass doors in special racks attached to cabinets (not shown in photograph). It's a matter of seconds.

Model	L	W	H	Cu. Ft.	No. of Comp.
AL-20	72"	30"	67"	20	5
AL-30	96"	30"	67"	30	6
AL-40	120"	30"	67"	40	8

• Write-Wire-Phone for Exclusive Distributorships Available

FRIGITEMP CORPORATION 931 Bergen St., Brooklyn 16, N.Y. Main 2-9093-4

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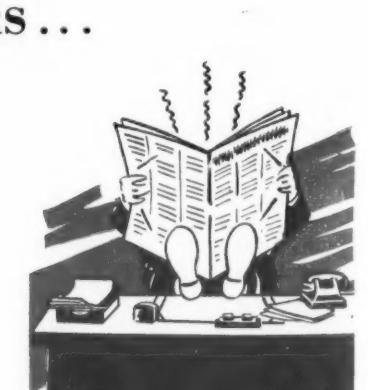
A "soapbox" isn't the answer.

But—your advertising in the special Exposition Issue of AIR CONDITIONING & REFRIGERATION NEWS *is* the answer if you want to reach your best customers and prospects for top results from the industry's biggest product show.

SHOW VISITORS . . .

. . . AND STAY-AT-HOMES



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